EPA/ROD/R04-97/064
1997

EPA Superfund
Record of Decision:

MARINE CORPS LOGISTICS BASE
EPA ID: GA7170023694
OU 01
ALBANY, GA
09/02/1997

<IMG SRC 970640>
<IMG SRC 97064A>

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

4WD-FFB

Commanding General
Marine Corps Logistics Base-Albany
Albany, Georgia 31704-1128

SUBJ: Record of Decision
Operable Unit 1, PSC 1, PSC 2, PSC 3, PSC 26
MCLB-Albany NPL Site
EPA ID# GA7170023694
Albany, GA 31704

Dear Sir:

The U.S. Environmental Protection Agency (EPA) Region 4 has reviewed the above subject decision document and concurs with the remedy of Institutional Controls at PSCs 3 and 26 and No Action at PSCs 1 and 2 at Operable Unit 1. This remedy is supported by the previously completed Remedial Investigation, Feasibility Study and Risk Assessment Reports, as well as the Removal Action for the sludge piles at PSC 3. The remedy of Institutional Controls and No Action is protective of human health and the environment.

It is EPA's expectation that PSCs 3 and 26 will be monitored on a regular basis by the MCLB Albany Environmental staff to ensure that the institutional controls are in place and being adhered to by the base. On other facilities this has been done on a quarterly basis and it is recommended that MCLB follow Department of the Navy guidelines in conducting such inspections. As described in the Institutional Control Plans for PSC 3 and PSC 26, any proposed changes in use of either site "are subject to approval by USEPA Region IV and GEPD." EPA will review the need for future remediation, monitoring, or changes in institutional controls under all applicable statutes, if any changes in use are proposed. In addition, it is imperative that the current excellent coordination between the MCLB Environmental personnel and the MCLB Construction personnel continue and that all proposed projects that could impact the areas encompassed by PSCs 3 and 26 be reviewed by the MCLB Environmental office. These measures will result in the elimination of any inadvertent noncompliance with the institutional control requirements.

EPA appreciates the coordination efforts of MCLB Albany and the level of effort that was put forth in the documents leading to this decision. EPA looks forward to continuing the exemplary working relationship with MCLB Albany and Southern Division Naval Facilities Engineering Command as we move toward final cleanup of the NPL site.

<IMG SRC 97064B>

cc: Sid Allison, SOUTHDIV
Lt. Frantz, MCLB-Albany
Jerry Wallmeyer, REC (NASJAX)
Joel Sanders, SOUTHDIV
Madeleine Kellam, GAEPD
Kelley Dreyer, USMC

bcc: Scott Gordon, EAD
Allison Abernathy, FFRRO/OSWE
David Levenstein, FFEO/OECA

<IMG SRC 97064C>
<IMG SRC 97064D>

UNITED STATES MARINE CORPS
MARINE CORPS LOGISTICS BASE
814 RADFORD BOULEVARD
ALBANY, GEORGIA 31704-1128

IN REPLY REFER TO:

5090.14.7.1
F&S2

August 15, 1997

CERTIFIED MAIL

Mr. Robert Pope
U.S. Environmental Protection Agency
Region IV, 4WD-FFB
100 Alabama Street, S.W.
Atlanta, Georgia 30303

RE: FINAL SIGNED RECORD OF DECISION FOR OPERABLE UNIT 1 (OU1), MARINE CORPS LOGISTICS BASE, ALBANY

Dear Mr. Pope:

Enclosed are three (3) copies of the Final Signed Record of Decision for OU1.

If you require further assistance, please contact LT Alan Frantz, Installation Restoration Program Manager, at (912)439-5637/6261.

<IMG SRC 97064E>

GILBERT G. WARE
Director
Facilities & Services Division
By direction of Commanding General

Encl:
(1) Final Signed Record of Decision OU1
(three copies)

Copy to:
SOUTHNAVFACENGCOM - (Code 1861)
ABB Environmental Services, Inc. - (Ms. Miriam Sellers)
TRC Members

RECORD OF DECISION
OPERABLE UNIT 1

MARINE CORPS LOGISTICS BASE
ALBANY, GEORGIA

Unit Identification Code: M67004

Contract No.: N62467-89-D-0317/048

Prepared by:

ABB Environmental Services, Inc.
2590 Executive Center Circle, East
Tallahassee, Florida 32301

Prepared for:

Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29418

Joel Sanders, Code 1868, Remedial Project Manager

August 1997

CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, ABB Environmental Services, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/048 are complete and accurate and comply with all requirements of this contract.

DATE: August 13, 1997

NAME AND TITLE OF CERTIFYING OFFICIAL: Joseph H. Daniel, P.G.
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: David E. Heislein
Project Technical Lead

(DFAR 252.227-7036)

DECLARATION OF THE
RECORD OF DECISION

SITE NAME AND LOCATION

Marine Corps Logistics Base
Operable Unit One
814 Radford Blvd
Albany, Georgia 31704-1128

STATEMENT OF PURPOSE AND BASIS

This Record of Decision (ROD) document presents the final response for Operable Unit (OU) 1 at the Marine Corps Logistics Base (MCLB), Albany. It was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act, and to the extent practicable, the National Contingency Plan (NCP). This decision is based on the site's Administrative Record, which is on file at the Environmental Branch Office, Facilities and Service Division, Building 5501, MCLB, Albany, Georgia 31704, and at the information repository in the Dougherty County Public Library, Albany, Georgia. Based on the review of this OU 1 ROD and previous documents, the U.S. Environmental Protection Agency (USEPA) Region IV and State of Georgia concur with the selected remedies.

ASSESSMENT OF THE SITE

OU 1 consists of four potential sources of contamination (PSQ): PSC 1, East Disposal Area; PSC 2, Rubble Disposal Area; PSC 3, Long-Term Landfill; and PSC 26, the Containment Berm Area. PSC 3 is also a solid waste landfill closed under the State of Georgia Solid Waste regulations in 1988.

A remedial investigation and baseline risk assessment (RI/RA) was conducted at OU 1 between 1992 and 1995. The baseline RA examined the hypothetical situations for current land use in which an older child could trespass on OU 1 and a hypothetical future land use of OU 1, which assumes residential use by adults and children and associated exposures to utility construction workers. These hypothetical situations represent the most sensitive receptor and conservative risk estimates for OU 1. The RA evaluated both cancer and noncancer risks. An ecological RA was also conducted for OU 1.

According to the NCP for Superfund sites, the acceptable cancer risk range is from 1 in 10,000 (1xlO -4) to 1 in 1 million (1xlO -6), depending on site-specific conditions. Although the estimated risk of 1xlO -6 is the point of departure in determining the need for a response action, site-specific conditions at OU 1 indicate that application of the acceptable risk range is appropriate. Site-specific conditions supporting the use of the risk range include the base perimeter fence, which restricts public access to surface and subsurface soils, surface water and sediment at OU 1. For noncancer risks, the similar point of departure is a hazard index (HI) greater than 1. If the total estimated noncancer risk exceeds this value, then site-specific conditions and effects from individual compounds are evaluated to determine if a response is necessary.

The RA conducted for surface and subsurface soil at PSC 1 resulted in risks acceptable to the USEPA Region IV for carcinogens (3x10 -7) and noncarcinogens (HI of 0.24). There was no surface water or sediment present at this site. The RA for PSC 2 included surface and subsurface soils, surface water and sediment. The RA results were also acceptable to USEPA Region IV (9xl0 -6, HI of 0.50) such that no treatment, containment or restricted access are required for PSCs 1 and 2.

With the exception of the sludge piles located on the surface of PSC 3, the cancer (9x10 -6) and noncancer risks (HI of 1) from exposure to surface and subsurface soil, surface water, and sediment were acceptable to USEPA Region IV. The sludge piles were found to contain elevated concentrations of inorganic chemicals posing a potentially unacceptable noncancer risk to the current child trespasser (HI of 2) and potential future resident (adult and child, HI of 24). As a result, the three sludge piles were removed down into the landfill soil cover and disposed of off-base at a permitted disposal facility in May 1996. Confirmatory sampling was performed, following removal of the sludge, indicating elevated inorganic chemical concentrations in the newly exposed landfill soil cover. Further excavation to remove the contaminated soil would have disturbed the PSC 3 landfill cover and was not performed. Per GEPD, USEPA Region IV, and the Navy's concurrence that certified clean fill was placed over the excavated area, thereby restoring the solid waste landfill soil cover. The disturbed areas were revegetated with native grass. Because PSC 3 is a former solid waste landfill, a response action will be implemented to protect the integrity of the soil cover.

Human health and ecological risks associated with exposure to the surface and subsurface soils at PSC 26 were evaluated and compared to the cancer and noncancer risk criteria (1x10 -4 to 1x10 -6, HI greater than 1). Cancer risks associated with exposure to the surface and subsurface soils were acceptable to USEPA Region IV (5x10 -5). Noncancer risks associated with the exposure to subsurface soils (HI of 0.1) was also acceptable. However, the PSC 26 surface soil was found to pose a potential noncancer risk (HI of 5) for a future child resident due to the presence of inorganics. Based on the potential noncancer risk for a future child resident, a response action at PSC 26 was necessary. No surface water or sediment was found at PSC 26.

DESCRIPTION OF THE SELECTED REMEDIES

There are six OUs at MCLB, Albany, and OU 1 is the third of the six OUs to have completed RODs. All three completed RODs for OU's 1, 2, and 3 address surface and subsurface soil, surface water, and sediment. These media will also be addressed during the RI/FS for OUs 4 and 5, which will be completed soon. Groundwater will be addressed under a continuing basewide investigation within OU 6 and is the principal potential threat remaining at MCLB, Albany. This OU is currently in the RI phase.

This final response for OU 1 proposes that No Action (NA) be implemented at PSCs 1 and 2. This response does not require any treatment, containment, or land-use restrictions at these two PSCs. The final response also requires the implementation and enforcement of land-use restrictions at PSCs 3 and 26 via Institutional Control Plans (ICPs). These ICPs will be incorporated into MCLB, Albany's Base Master Plan document. The ICP to protect the integrity of the soil cover at PSC 3 is provided in Appendix B of this ROD. The ICP for PSC 26, which restricts future residential development and land use of the site, is presented in Appendix C of this ROD. Under these ICPs, land management activities, such as prescribed burns to reduce the potential for forest fires and the disposal of organic debris (PSC 3), maintenance of existing utility lines, and other activities required to ensure adequate protection of human health and the environment will be permitted. If the property is excessed by the Federal Government, the Navy will pursue deed restrictions on the areas encompassed by PSC 3 and 26.

STATUTORY DETERMINATIONS

The final response actions proposed for OU 1 address the surface and subsurface soil, surface water, and sediment. Specifically, the final response for PSCs 1 and 2 is NA because no remedial action is necessary to protect human health or the environment. A future review of site conditions at PSCs 1 and 2 will not be required because hazardous substances remaining onsite do not pose an unacceptable risk to human health and the environment.

The final response actions for PSCs 3 and 26 requiring the implementation of land-use restrictions will be protective of human health and the environment. The response action at PSCs 3 and 26 comply with most Federal and State requirements that are legally applicable or relevant and appropriate to the response action, and are cost effective.

Following the Time-Critical Removal of the sludge piles at PSC 3, the remaining soil, surface water, and sediment do not pose an unacceptable risk according to USEPA Region IV. However, a response action is still required to protect the integrity of the soil cover on this former solid waste landfill. A review will be conducted within 5 years after implementation of the ICP to ensure that the remedy continues to provide adequate protection of human health and the environment from the landfill.

The remedy at PSC 26 will allow hazardous substances to remain onsite in PSC 26 surface soils above health-based levels. Therefore, a review will be conducted within 5 years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

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Operable Unit 1
Marine Corps Logistics Base
Albany, Georgia

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
ARAR	Applicable or Relevant and Appropriate Requirement
bls	below land surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CPC	chemical of potential concern
DCE	1,2-dichloroethene
EP	extraction procedure
ERA	ecological risk assessment
FFA	Federal Facility Agreement
GEPD	Georgia Environmental Protection Division
HI	hazard index
IAS	initial assessment study
ICP	Institutional Control Plan
MCL	maximum contaminant level
MCLB	Marine Corps Logistics Base
mg/kg	milligrams per kilogram
Ig/kg	micrograms per kilogram
Ig/l	micrograms per liter
NA	no action
NCP	National Oil and Hazardous Substances Contingency Plan
NPL	National Priority List
OU	operable unit
PCBs	polychlorinated biphenyls
PSC	potential source of contamination
RA	risk assessment
RCRA	Resource Conservation and Recovery Act
RFI	Resource Conservation and Recovery Act (RCRA) Facility Investigation
RI	remedial investigation
RI/FS	remedial investigation and feasibility study
RI/RA	remedial investigation/risk assessment
ROD	Record of Decision
SOUTHNAV-FACENGCOM	Southern Division, Naval Facilities Engineering Command
SVOC	semivolatile organic compound

GLOSSARY (Continued)

TCE	trichloroethene
TM	trade mark
TOC	total organic carbon
USEPA	U.S. Environmental Protection Agency
USMC	U.S. Marine Corps
VC	vinyl chloride
VOC	volatile organic compound

1.0 SITE NAME, LOCATION, AND DESCRIPTION

Marine Corps Logistics Base (MCLB) , Albany is an active facility occupying 3,579 acres east-southeast of the city of Albany, Georgia. Land bordering MCLB, Albany to the south, east, and northeast is primarily agricultural or recreational open space. Most of the land to the northwest and west of the base is residential and commercial.

Operable Unit (OU) 1 is located in the east-central portion of the base, just inside the northern perimeter along North Shaw road. Figure 1-1 identifies the location of MCLB, Albany and the approximate location of potential sources of contamination (PSCs) 1, 2, 3, and 26 that make up OU 1.

1.1 PSC 1. PSC 1, the East Disposal Area, is an inactive landfill approximately 1 acre in size, located adjacent to the western edge of the Indian Lake Wildlife Refuge Area and south of North Shaw Road (Figure 1-2). PSC 1 was reportedly used for the disposal and burning of paper, wood, garbage, solvents, paints, and thinners in trench-and-fill operations between 1958 and 1959. The area was subsequently compacted, covered with soil, and planted with pine trees.

1.2 PSC 2. PSC 2, the Rubble Disposal Area, is an inactive disposal area used between the mid 1950s and 1980. PSC 2 is approximately 7 acres in size and located due west of the Indian Lake Wildlife Refuge Area and due south of North Shaw Road (Figure 1-2). This area reportedly received asphalt, concrete, and other construction debris. There is also the possibility that solvents, paints, and thinners were discarded in this area. PSC 2 currently has a vegetative cover consisting of grass, low shrubbery, and pine trees.

1.3 PSC 3. The Long-Term Landfill is an inactive, 38-acre trench-type disposal area located approximately due west of the Indian Lake Wildlife Refuge area and immediately south of North Shaw Road (Figure 1-3). This area was reportedly used for the disposal of solvents, paints, thinners, strippers, pesticides, sludges, polychlorinated biphenyls (PCBs) , garbage, and paper between 1954 and 1988. The landfill was operated from north to south with regular burning until the early 1970s. This landfill was officially closed in 1988 in compliance with the State of Georgia solid waste regulations. Closure certification required the installation of a soil cover and the planting of natural vegetation. Three sludge piles were also located on the surface of the landfill soil cover in the northeast corner of PSC 3 (Figure 1-3). These sludge piles were removed and disposed of off-base at a permitted disposal facility under a Time-Critical Removal Action in May 1996. PSC 3 is currently being used to dispose of organic debris, such as trees, branches, and grass cuttings.

1.4 PSC 26. The Containment Berm Area is located east of Walker Avenue and immediately south of North Shaw Road (Figure 1-4), measuring approximately 29 acres in size. Aerial photographs indicate that the surface of this area was disturbed some time between 1957 and 1964. Three disturbed areas and a berm were identified in these photographs as shown on Figure 1-4. The exact construction and use of the berm at PSC 26 have not been determined. Visual inspection of the berm indicates that the area may have been used as a disposal area. The area has not been used since 1964 and has subsequently become overgrown with vegetation.

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2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

MCLB, Albany currently serves as a U.S. military logistics center controlling the acquisition,

storage, maintenance, and distribution of combat and support material for the U.S. Marine Corps (USMC). In addition, the base is used for military training and other tasks and functions as directed by the Commandant of the USMC.

MCLB, Albany has generated various types of solid and liquid wastes over the years, including hazardous wastes. The hazardous wastes include electroplating wastes containing heavy metals, organic solvents from stripping and cleaning operations, and waste fuel and oil.

Beginning in 1985, three investigations were performed to assess and characterize PSCs identified at MCLB, Albany. These investigations included the 1985 initial assessment study (IAS), the 1987 confirmation study, and the 1989 Resource Conservation and Recovery Act (RCRA) facility investigation (RFI). As a result of these investigations, MCLB, Albany was placed in Group 7 (Hazard Ranking System score of 45.91 to 43.75) of the National Priority List (NPL) for Uncontrolled Hazardous Waste Sites (December 1989).

2.1 INITIAL ASSESSMENT STUDY. An IAS was conducted by Envirodyne Engineers, Inc., at MCLB, Albany in 1985 to identify and assess PSCs posing a potential threat to human health or the environment due to contamination from past hazardous materials disposal practices. Eight PSCs were identified at MCLB, Albany based on historical data, aerial photographs, field inspections, and personal interviews. All eight PSCs, including PSCs 1, 2, and 3, were evaluated to determine contaminant characteristics, migration pathways, and potential receptors. PSC 26 had not yet been identified at the time of the IAS.

The primary pathways identified for migration of contaminants include erosion, surface water runoff, and groundwater transport. The predominant topographic slope at OU 1 is to the north, where surface water ultimately discharges to the Flint River. The predominant direction of regional groundwater flow is west toward the Flint River, which is located approximately 2.7 miles from the base. Potential receptors identified include aquatic organisms in the receiving waters, predators and other animals relying on these areas for food and water, and humans using the Flint River for recreational purposes.

The IAS concluded that six of the eight PSCs (PSCs 1, 2, 3, 5, 6, and 7) warranted further investigation under the Navy Assessment and Control of Installation Pollutants program to assess long-term impacts. The primary recommendation of the study was to conduct a Confirmation Study to confirm or disprove the existence of the suspected contamination and to quantify the extent of any existing problems. Specifically, this Confirmation Study would determine (1) whether a threat to human health or the environment existed, (2) the extent of contamination, and (3) the potential for contaminant migration.

2.2 CONFIRMATION STUDY. The Confirmation Study was conducted by McClelland Engineers at the MCLB, Albany facility in 1986 at nine PSCs: the six PSCs recommended for further evaluation by the IAS and three additional PSCs identified as potential threats to human health and the environment (PSCs 9, 10 and 11). PSCs 1, 2, and 3 were included within this Confirmation Study. As previously stated, PSC 26 had not yet been identified.

The field investigation methodology and analytical results completed during the Confirmation Study at OU 1 (excluding PSC 26) are summarized below.

2.2.1 PSC 1 Four soil borings were drilled at PSC 1 to total depths ranging from 35 feet to 60 feet below land surface (bls). Two monitoring wells were installed in the soil borings.

One groundwater sample and four soil samples were collected for laboratory analyses. Laboratory analyses included acid and base-neutral extractables, volatile organic compounds (VOCs), pesticides and polychlorinated biphenyls (PCBs), selected extraction procedure (EP) toxicity

metals, and pH. No geophysical surveys were conducted, and no surface water or sediment samples were collected.

Methylene chloride and various metals were detected in two soil samples. Methylene chloride and phthalate esters are common laboratory contaminants and sampling artifacts, and EP toxicity metals concentrations were below maximum contaminant levels (MCLs) as defined by 40 Code of Federal Regulations (CFR) 161. Trichloroethene (TCE) was detected in groundwater samples from one monitoring well.

2.2.2 PSC 2 Five soil borings were drilled at PSC 2 to total depths ranging from 32 feet to 41 feet bls. Two additional soil borings were completed with hand augers to a depth of 0.5 foot bls. Two monitoring wells were installed in soil borings. No geophysical surveys were conducted, and no surface water or sediment samples were collected.

Three soil samples and two groundwater samples were collected for laboratory analyses. Laboratory analyses included acid and base-neutral extractables, VOCs, pesticides and PCBs, EP toxicity metals, total organic carbon (TOC), specific conductance, and pH.

Methylene chloride and various extractables (fluoranthene, benzo[b or k)fluoranthene, di-n-butylphthalate, and bis[2-ethylhexyl]phthalate) were detected in two soil samples. Lead was detected in one soil sample. Methylene chloride and phthalate esters are common laboratory contaminants and sampling artifacts and EP toxicity metals concentrations were below MCLs as defined by 40 CFR 161.

2.2.3 PSC 3 Seven soil borings were drilled at PSC 3 to depths ranging from 25 feet to 49 feet bls. Four monitoring wells were installed in soil borings. No geophysical surveys were conducted, and no surface water samples were collected.

Four soil samples, two sediment samples, and one groundwater sample were collected for laboratory analyses. Laboratory analyses included acid and base-neutral extractables, VOCs, pesticides and PCBs, EP toxicity metals, TOC, specific conductance, and pH.

Methylene chloride was detected in one soil sample and two sediment samples. Phthalate esters were detected in three soil samples. Lead was detected in two soil samples and two sediment samples. Chromium, arsenic, and mercury were detected in two sediment samples. Only one groundwater sample was collected for analysis; methylene chloride and bis(2-ethylhexyl) phthalate were detected in this sample. Methylene chloride and phthalate esters are common laboratory contaminants and sampling artifacts. EP toxicity metals concentrations were below MCLs as defined by 40 CFR 161.

Based on the Confirmation Study results, additional investigation was recommended for PSCs 1, 3, 6, 9, and 11.

2.3 RCRA FACILITY INVESTIGATION. Subsequent to the 1987 Confirmation Study, nine PSCs (PSCs 1, 2, 3, 5, 6, 7, 9, 10, and 11) were identified as solid waste management units by the Georgia Environmental Protection Division (GEPD) in the Part B RCRA Permit for MCLB, Albany. Terms of this permit required that an RFI be conducted at each of the PSCs to determine the nature and extent of releases and the potential pathways of contaminant migration to the environment. Applied Engineering and Science, Inc. , completed the RFI and submitted a final report in 1989. The field investigation methodology and analytical results completed during the RF1 at PSCs 1, 2, and 3 are summarized below. PSC 26 had not yet been identified at the time of the RFI.

2.3.1 PSC 1 During the RFI, three monitoring wells, ranging in depth from 62 feet to 89 feet bls, were installed at PSC 1. Three groundwater samples, one from each well, were collected for

laboratory analyses. No geophysical surveys were conducted, and no surface water or sediment samples were collected.

Laboratory analytical results for two groundwater samples were below quantitation limits or below MCLs for metal concentrations. Benzene, chlorobenzene, 1,2-dichlorobenzene, trans-1, 2-dichloroethene (DCE), toluene, TCE, and vinyl chloride were detected in one groundwater sample.

2.3.2 PSC 2 Four wells, ranging in depth from 93 feet to 109 feet bls, were installed at PSC 2. Three groundwater samples were collected for laboratory analyses. No geophysical surveys were conducted, and no surface water or sediment samples were collected.

Laboratory analytical results for one groundwater sample were below quantitation limits or below MCLs for metal concentrations. Only VOCs (benzene, trans-DCE, and TCE) were detected in one groundwater sample.

2.3.3 PSC-3 Seven wells, ranging in depth from 30 feet to 111 feet bls, were installed at PSC 3. Four groundwater samples were collected for laboratory analyses. No geophysical surveys were conducted, and no surface water or sediment samples were collected.

Laboratory analytical results for all samples except one were below quantitation limits or below MCLs for metal concentrations. Only VOCs (trans-ME and TCE) were detected in the groundwater sample from one well.

Of the nine PSCs studied in the RFI, only PSCs 7 and 9 did not require further investigation. PSC 26 was identified subsequent to this RFI and evaluated during the remedial investigation and risk assessment (RI/RA) for OU 1.

2.4 REMEDIAL INVESTIGATION/RISK ASSESSMENT. In July 1991, the Department of the Navy, representing MCLB, Albany, entered into a Federal Facilities Agreement (FFA) with the GEPD and the U.S. Environmental Protection Agency (USEPA) Region IV. The FFA established a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions at the facility in accordance with the provisions of Comprehensive Environmental Response, Compensation, and Liability Act (CERCIA), RCRA, the National Oil and Hazardous Substances Contingency Plan (NCP), Superfund guidance and policy, and the Georgia Hazardous Waste Management Act.

The conclusions of the three previous investigations indicated a need for additional data collection over the entire installation. Between 1987 and 1991, the total number of PSCs to be investigated at MCLB, Albany increased to 24. Available data on the 24 PSCs were sufficient to indicate the requirement for a remedial response as described in the NPL to characterize the extent of contamination, assess releases, and develop responses. As a result of more recent investigations, two additional PSCs, 25 and 26, were identified, resulting in a total of 26 PSCs. PSC 26 was discovered during the remedial investigation (RI) for PSC 3 as a possible source contributing to the groundwater contamination present at PSC 3. According to the FFA, 14 of the PSCs required an immediate remedial investigation and feasibility study (RI/FS), 2 PSCs required RCRA investigations, while the remaining 10 PSCs required site-screening activities. As a result, ABB Environmental Services, Inc. (ABB-ES), was contracted under the CERCLA, Navy contract to prepare and execute RI/FS workplans, site-screening workplans, and associated planning documents for PSCs at MCLB, Albany.

Under the RI/FS process, groups of PSCs are defined as OUs due to their proximity, similarity of waste, and similarity of investigative techniques or potential response actions. OU 1, consisting of PSCs 1, 2, 3, and 26, was developed due to the close proximity of the four PSCs,

contamination at the sites, and use as former disposal areas by the installation. The final RI/RA report for OU 1, excluding PSC 26, was released in May 1995. An addendum to this report, presenting the investigation of PSC 26, was released in May 1997. The results of the remedial investigations at OU 1 are presented below.

2.4.1 Scope of RI The RI defined the nature and extent of contamination of surface and subsurface soil, surface water, and sediment at OU 1. These investigations were conducted in two phases. The first phase of investigation included a geophysical survey, soil gas survey, cone penetrometer testing, and GeoprobeÖ investigations. The geophysical survey was used to determine the vertical and horizontal extent of disposal trenches, locate buried metallic objects, and identify areas of previously disturbed or excavated soil. The soil gas sur-vey was used to identify in situ organic vapors of selected volatile compounds that may have settled into the subsurface soil. The cone penetrometer test determined the composition and thickness of the clayey layer above the bedrock limestone. The GeoprobeÖ was used to sample and analyze subsurface soil for contamination from 6 to 26 feet bls.

The second phase of the RI consisted of surface soil sampling (0 to 12 inches bls), soil borings and subsurface soil sampling (1 to 40 feet bls), and collection of surface water and sediment samples as available. The objectives of these activities were to determine it-contamination exists and to determine if contaminants have migrated from their original location. Background sampling was also conducted to provide site-specific data on naturally occurring elements in MCLB, Albany soil and organics commonly found along roadsides or in developed areas. These background samples included random concentrations of pesticide residue and polyaromatic hydrocarbons from past use, which do not indicate a potential source of contamination. Analytical results from this RI are presented in Chapter 5.0 of this Record of Decision (ROD).

PSC 1: One background sample and six surface soil samples were collected at PSC 1. Twenty-three soil borings, including one background soil boring, were also completed at PSC 1. Four sediment samples were collected along the south edge of North Shaw Road near PSC 1. However, because the drainage ditch very rarely contains water, no surface water samples were collected. Therefore, these four sediment samples were included in the PSC 1 database as surface soil samples. Sample locations are shown on Figure 2-1.

PSC 2: One background sample and 14 surface soil samples were collected at PSC 2. One background boring and four soil borings were also completed at PSC 2. Six sediment samples were collected from the drainage ditch along PSC 2. However, only the two locations along North Shaw Road contained adequate water for corresponding surface water samples. The remaining sediment samples were included in the PSC 2 database as surface soil samples. Sample locations are shown on Figure 2-2.

PSC 3: One background sample and 14 surface soil samples were collected at PSC 3 (including the sludge pile). One background boring and 11 soil borings were also completed at PSC 3. Two sediment and surface water samples were collected from the drainage ditch at PSC 3 along North Shaw Road. Sample locations are shown on Figure 2-3.

PSG 26: One background sample and 10 surface soil samples were collected at PSC 26. One background boring and 40 soil borings were also completed at PSC 26. No other samples were collected from PSG 26, due to the absence of surface water and sediment. Sample locations are shown on Figure 2-4.

Due to the detection of an isolated metallic object just below the surface, soil excavation was conducted at PSC 26. This resulted in the identification of assorted metal and burned materials approximately 1 foot bls in the vicinity of surface soil sample 26SS01 (Figure 2-4). Excavation of the area confirmed the disposal of miscellaneous debris (e.g., broken glass bottles), but no

potential source of contamination.

Laboratory tests were conducted on samples of surface soil, subsurface soil, and sediment from OU 1. Analyses were also done on the sludge piles in the northeast corner of PSC 3 and surface water from PSCs 2 and 3. Samples were analyzed in onsite labs and in federally approved off-site labs. Samples, with few exceptions, were analyzed for VOCs, semivolatile organic compounds (SVOCS) , pesticides and PCBs, inorganics, and cyanide.

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<IMG SRC 97064O>
<IMG SRC 97064P>

2.5 OU 1-RELATED DOCUMENTS. The following reports, available for review by the public at Dougherty County Public Library in Albany, Georgia, and at the MCLB, Albany Environmental Branch office, describe the detailed methodology and results of investigations at OU 1:

ABB Environmental Services, Inc. (ABB-ES). 1992. Volume 1 Remedial Investigation/Feasibility Study (RI/FS) Workplan for Operable Units One and Two (OUs 1 and 2), MCLB, Albany, Georgia (March).

ABB-ES. 1992. Volume II Sampling and Analysis Plan for OUs 1 and 2, MCLE, Albany, Georgia (March).

ABB-ES. 1992. Volume III Health and Safety Plan, OUs 1 and 2, MCLB, Albany, Georgia (March).

ABB-ES. 1994. Treatability Study Workplan of Bench-Scale Tests, OU 1, MCLB, Albany, Georgia (June).

ABB-ES. 1994. Utilities Design, PSC 1, OU 1, MCLB, Albany, Georgia (July).

ABB-ES. 1994. Utilities Design, PSC 3, MCLB, Albany, 'Georgia (July).

ABB-ES. 1994. Proposed Plan, Operable Unit 1, PSC 3 Interim Corrective Measure, MCLB, Albany, Georgia (July).

ABB-ES. 1994. Final Design Interim Corrective Measure, PSC 3, MCLB, Albany, Georgia (August).

ABB-ES. 1994. RI/FS Workplan Addendum for OUs 1 and 2, MCLB, Albany, Georgia (October).

ABB-ES. 1995. Revised Bench-Scale Treatability Study, Technical Memorandum, OU 1, MCLB, Albany, Georgia (March).

ABB-ES. 1995. Revised Groundwater Injection Well Permit Application, Pilot-Scale Treatability Study, OU 1, MCLB, Albany, Georgia (March).

ABB-ES. 1995. Revised Final Design Pilot-Scale Treatment System, OU 1, MCLB, Albany, Georgia (May).

ABB-ES. 1995. Remedial Investigation/Risk Assessment (RI/RA) Report for OUs 1 and 2, Volumes 1-III, MCLB, Albany, Georgia (May).

ABB-ES. 1996. Action Memorandum, PSC 3, OU 1, MCLB, Albany, Georgia (May).

ABB-ES. 1996. Closure Document, PSG 3, OU 1, MCLB, Albany, Georgia (June).

ABB-ES. 1997. Removal Action Report for PSG 3 Sludge Piles, OU 1, MCLB, Albany, Georgia (January).

ABB-ES. 1997. RI/RA Report Addendum for OU 1, MCLB, Albany, Georgia (May).

ABB-ES. 1997. Proposed Plan for OU 1, MCLB, Albany, Georgia (July).

Applied Engineering and Science, Inc. 1989. RCRA Facility Investigation Phase One Confirmation Study, MCLB, Albany, Georgia.

Crawford, V.I. 1979. Environmental Engineering Survey, Marine Corps Logistics Base (MCLB), Albany, Georgia. Prepared for SOUTHNAVFACENGCOM.

Envirodyne Engineers, Inc. 1985. Initial Assessment Study, Marine Corps Logistics Base, Albany, Georgia.

Marine Corps Logistics Base (MCLB). 1994. Superfund Interim Record of Decision, Groundwater Containment, OU 1, PSC 3, MCLB, Albany, Georgia (September).

McClelland Engineers. 1987. Final Report, Confirmation Study Verification Step, Marine Corps Logistics Base, Albany, Georgia. Prepared for SOUTHNAVFACENGCOM.

Naval Facilities Engineering Command, Southern Division (SOUTHNAVFACENGCOM). 1974. Multiple Use Natural Resources Management Plan for Marine Corps Supply Center, Albany, Georgia.

SOUTHNAVFACENGCOM. 1993. Master Plan, MCLB, Albany, Georgia.

3.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Proposed Plan for OU 1 recommended No Action (NA) for PSCs 1 and 2, and Institutional Controls for PSCs 3 and 26. This document was made available to the public in the Information Repository located at the Dougherty County Public Library and in the Administrative Record located at the Environmental Branch Office, Building 5501, MCLB, Albany, Georgia, 31704-1128. The public notice of the Proposed Plan was published in the Albany Herald on July 18, 1997, and meeting notices were mailed to the MCLB IR community mailing list. The public comment period for the Proposed Plan was July 14 to August 12, 1997. A public meeting was held on August 7, 1997, at the Human Resources Office, Building 3010, MCLB, Albany, At this meeting, representatives from Southern Division, Naval Facilities Engineering Command (SOIUTHNAVFACENGCOM), MCLB, Albany, USEPA Region IV, GEPD, and ABB-ES were available to discuss all aspects of OU 1 and the response actions under consideration. The Community Relations Responsiveness Summary is included in Appendix A of this decision document.

4.0 SCOPE AND ROLE OF THE FINAL RESPONSE AT OU 1

MCLB, Albany contains 26 PSCs. Of these PSCs, 14 required an RI/FS, 10 are in site screening, and the remaining 2 PSCs are being addressed under RCRA. The 14 PSCs requiring an RI/FS were divided into 5 individual OUs to address surface and subsurface soil, surface water, and sediment. Basewide groundwater is addressed as OU 6. The OUs and the PSCs within each OU are listed below along with the current regulatory status.

- OU 1 - composed of PSCs 1, 2, 3, and 26, completed ROD
- OU 2 - composed of PSC 2, completed ROD in September 1996
- OU 3 - composed of PSCs 16 and 17, completed ROD in August 1997
- OU 4 - composed of PSCs 6, 10, 12, 13, and 22, currently in RI phase
- OU 5 - composed of PSCs 8 and 14, ROD currently being prepared
- OU 6 - basewide groundwater, currently in RI phase

The selected remedy for OU 2 was NA, while individual remedies were selected for each of the PSCs at OU 3. A cap was placed over the contaminated soils and Institutional Controls established at PSC 16, while soil excavation and off-site disposal were required at PSC 17.

The proposed response for OU 1 consists of two remedies: PSCs 1 and 2 are NA, and PSCs 3 and 26 are Institutional Controls. Under the NA response, no treatment, containment, or restricted access is required at PSCs 1 and 2 to protect human health and the environment.

Land-use restrictions will be implemented at PSC 3. The human health and ecological risk assessment conducted at PSC 3 determined that exposure to the surface soil, subsurface soil, surface water, and sediment posed an acceptable risk according to USEPA Region IV for existing or potential future exposure scenarios. However, Institutional Controls are required to ensure the integrity of the soil cover on this former solid waste landfill. The Institutional Control Plan (ICP) for PSC 3 is presented in Appendix B of this ROD and will become part of MCLB, Albany's Master Plan document. If the property is excessed by the Federal Government, the Navy will pursue deed restrictions on the areas encompassed by PSC 3.

Land-use restrictions will be implemented at PSC 26. The human health and ecological risk assessment conducted at PSC 26 determined that exposure to the subsurface soil, surface water, and sediment posed an acceptable risk according to USEPA Region IV for existing or potential future exposure scenarios. However, the surface soils were found to pose an unacceptable risk to a potential future resident. Therefore, Institutional Controls are required to restrict potential future residential development of PSC 26. The ICP for PSC 26 is presented in Appendix C of this ROD and will also become part of MCLB, Albany's Master Plan document. If the property is excessed by the Federal Government, the Navy will pursue deed restrictions on the areas encompassed by PSC 26.

These response actions were concluded in accordance with the NCP and USEPA regulatory guidance for Superfund sites.

The groundwater at KCLB, Albany is the principal potential threat remaining at MCLB, Albany. Groundwater is being addressed under OU 6, an ongoing basewide investigation.

5.0 SUMMARY OF SITE CHARACTERISTICS

This section summarizes the regional geology, hydrogeology, and ecology in the vicinity of MCLB, Albany. The nature and extent of contaminants is also presented for OU 1. A more detailed presentation of this information is available in the two RI/RA reports for OU 1 (ABB-ES, 1995 and 1997a).

5.1 GEOLOGY. MCLB, Albany is located in the Coastal Plain Physiographic Province, which is made up of layers of sand, clay, sandstone, and limestone. These layers of soil and rock extend to a depth of at least 5,000 feet bls. Each layer has been identified and named by geologists according to its composition and physical properties,

The soil and rock layers at MCLB, Albany, in descending order, are the clayey overburden, the Ocala Limestone, and the Lisbon Formation. The overburden layer is made up mostly of clay with

some silt and sand. The Ocala Limestone is divided into an upper unit and a lower unit. The upper unit is a lime mud or chalk. The lower unit is hard, dense rock that has been dissolved by the movement of water along fractures to form underground caves and springs. The Lisbon Formation is a hard, clayey limestone. These are the soil and rock layers that control the movement of underground water in the first 350 feet bls at MCLB, Albany. Figures 5-1 and 5-2 present a generalized geologic section of the Albany area.

5.2 HYDROGEOLOGY. Soil and rock layers are also grouped and named according to how water moves through them. Layers that bear water to wells are called aquifers, and layers that cannot bear water are called confining layers. The clayey overburden and the upper unit of the Ocala Limestone are considered together to be a confining layer. The lower unit of the Ocala Limestone is the major water-bearing zone of the Floridan aquifer. The Lisbon Formation forms a confining layer beneath the Floridan aquifer.

The Floridan aquifer is recharged by rainfall that slowly percolates down through the confining units and through sinkholes. Movement of water in the Floridan aquifer is generally west toward the Flint River, where it discharges to the river through springs (Figure 5-3).

Most irrigation wells and household water wells near MCLB, Albany draw water from the Floridan aquifer. City water wells may also draw water from the Floridan aquifer, although most of the city water is produced from deeper aquifers.

5.3 ECOLOGY. The majority of forested land in the vicinity of the base is vegetated with longleaf pine flatwoods, the most extensive plant community in the southern coastal plain. Pine flatwoods grow in Florida, Georgia, South Carolina, and North Carolina.

The pine flatwoods habitat commonly found at MCLB, Albany supports diverse plant and animal life, including invertebrates (e.g., insects and worms), reptiles, and amphibians. A number of mammals inhabit the pine flatwoods community, although no mammal is exclusive to this habitat. Pine flatwoods also provide habitat for a variety of birds, including seed- and insect-eaters, flycatchers, and aerial predators (e.g., owls and hawks).

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The presence of two rare and threatened species has been confirmed at the base. The American alligator (Alligator mississippiensis), now classified as threatened, has been documented in wetland habitats at the base; this semi-aquatic species is present throughout the southeast. Bachman's sparrow (Aimophila aestivalis), a State and federally listed "rare" species, is also a possible resident of the dry, open pine forests at MCLB, Albany; this large, secretive sparrow is a year-round resident of southern Georgia. The red-cockaded woodpecker (Picoides borealis), a federally listed endangered species, occurs almost exclusively within this pine flatwoods habitat; however, there are no known records for this species at MCLB, Albany.

5.4 NATURE AND EXTENT OF CONTAMINANTS. The nature, extent, and concentration of hazardous substance contamination at OU 1 was studied during a remedial investigation conducted between 1992 and 1995. Potentially hazardous substances detected at OU 1 and the media affected are listed in tables by PSC and media sampled and analyzed. Concentrations of analytes detected by laboratory analyses are reported in micrograms per kilogram (pg/kg) or milligrams per kilogram (mg/kg) for soil samples and micrograms per liter (Ag1l) for water samples. For instance, a concentration of 8,600 mg/kg for iron means that 8,600 milligrams of iron are present in each kilogram of soil. A kilogram is a unit measure of weight equal to about 2.2 pounds. One thousand micrograms equal 1 milligram, 1,000 milligrams equal 1 gram, and 1,000 grams equal 1

kilogram. A liter is a unit measure of volume roughly equal to a quart.

5.4.1 PSC 1. East Disposal Area The source of contaminants at PSC 1 appears to be the disposal trenches reportedly used during the 1959 and 1960 trench-and-fill operations. The areal extent of the disposal trenches, as interpreted from disturbed land surface areas visible on historical aerial photographs, was further delineated by geophysical surveys and soil gas surveys, and confirmed by soil borings. One organic contaminant, pentachlorophenol, was detected in the surface soil at PSC 1, while several organic contaminants were detected in the subsurface soil, all at low concentrations. The presence of these contaminants is likely due to the historical disposal of wastes in trenches at PSC 1. Low concentrations of pesticides were also found in the subsurface soil associated with the trench disposal areas. Inorganic compounds detected in PSC 1 surface and subsurface soil were found to be of similar concentrations as the site background data. Sampling results for surface and subsurface soil are presented in Tables 5-1 and 5-2, respectively. No other sources or potential sources of contamination were identified at PSC 1. Groundwater beneath all of OU 1 will be addressed as part of the ongoing investigation of OU 6.

5.4.2 PSC 2. Rubble Disposal Area The potential source area at PSC 2 was determined by the identification of disturbed land surface on aerial photographs. This trench-and-fill landfill was used for the disposal of construction debris, consisting primarily of asphalt and concrete rubble. Previous investigations revealed no significant contamination at PSC 2. During the RI, the area was screened extensively by geophysical surveys, soil gas surveys, and subsequent confirmatory sampling.

Table 5-1
Analytes Detected in Surface Soil, PSC 1

Analyte	No. of Samples in Which the Analyte is Detected/Total No. of Samples	Range of Detected Concentrations	Mean Concentration	Maximum Background Concentration
Semivolatile Organic Compounds (Ig/kg)				
bis(2-Ethylhexyl)phthalate	3/8	37.00 to 230.00	103.00	NP
Di-n-butylphthalate	1/8	40.00 to 40.00	40.00	NP
Pentachlorophenol	1/8	1,600.00 to 1,800.00	1,600.00	NP
Pesticides and PCBs (Ig/kg)				
4.4-DDE	3/7	1.70 to 2.00	1.93	NP
Inorganic Analytes (mg/kg)				
Aluminum	8/8	4,610.00 to 14,500.00	6,892.50	19,300
Antimony	3/8	3.60 to 5.10	4.50	4.2
Arsenic	8/8	0.58 to 3.20	1.62	31.4
Barium	8/8	14.40 to 24.50	19.14	378
Beryllium	8/8	0.10 to 0.41	0.19	0.76
Calcium	8/8	164.00 to 373.00	219.63	1,040
Chromium	8/8	7.90 to 47.20	15.11	286
Cobalt	8/8	1.20 to 2.70	1.85	27.8
Copper	7/8	0.98 to 5.80	2.25	11.2
Iron	8/8	8,600.00 to 29,400.00	14,150.00	25,300
Lead	8/8	10.20 to 31.00	21.33	96.3
Magnesium	8/8	64.70 to 127.00	94.49	261
Manganese	8/8	65.40 to 541.00	226.54	8,740
Mercury	6/8	0.02 to 0.07	0.03	0.09
Nickel	1/8	2.30 to 2.30	2.30	8.7
Potassium	1/8	104.00 to 104.00	104.00	221
Selenium	1/8	0.48 to 0.48	0.48	1.8
Silver	1/8	0.29 to 0.29	0.29	1.2
Sodium	1/8	35.90 to 35.90	35.90	107
Vanadium	8/8	22.90 to 72.90	36.55	59.9
Zinc	8/8	2.70 to 11.80	7.06	13.9

Notes: PSC = Potential Source of Contamination.
Ig/kg = micrograms per kilogram.
PCBs = polychlorinated biphanyle.
DDE = dichlorodiphenyldichloroethene.
mg/kg = milligrams per kilogram.
NP = not applicable.

Table 5-2
Analytes Detected in Subsurface Soil, PSC 1

Analyte	No. of Samples in Which the Analyte is Detected/Total No. of Samples	Range of Detected Concentrations	Mean Concentration	Maximum Background Concentration
Volatile Organic Compounds (Ig/kg)				
1,1,2-Trichloroethane	2/55	2.00 to 2.00	2.00	NP
1,2-Dichloroethane	4/55	2.00 to 11.00	7.50	NP
1,2-Dichloroethene (total)	11/55	1.00 to 100.00	23.91	NP
2-Butanone	7/55	4.00 to 150.00	57.71	NP
4-Methyl-2-pentanone	2/55	10.00 to 10.00	10.00	NP
Acetone	15/55	3.00 to 220.00	46.73	NP
Benzene	2/55	16.00 to 26.00	21.00	NP
Carbon tetrachloride	2/55	9.00 to 99.00	54.00	NP
Chlorobenzene	1/55	630.00 to 630.00	630.00	NP
Chloroform	5/55	3.00 to 11.00	6.00	NP
Ethylbenzene	9/55	2.00 to 670.00	178.89	NP
Methylene chloride	8/55	21.00 to 170.00	66.75	NP
Toluene	5/55	5.00 to 570.00	163.40	NP
Trichloroethene	13/55	2.00 to 1,200.00	194.92	NP
Xylenes (total)	9/55	4.00 to 10,000.00	1,246.89	NP

Semivolatile Organic Compounds (Ig/kg)

1,2-Dichlorobenzene	1/55	2,000.00 to 2,000.00	2,000.00	NP
1,4-Dichlorobenzene	1/55	540.00 to 540.00	540.00	NP
2,4-Dimethylphenol	3/55	370.00 to 2.800.00	1,990.00	NP
2-Methylnaphthalene	4/55	150.00 to 320.00	227.50	NP
2-Methylphenol	3/55	820.00 to 3,100.00	2,340-00	NP
4-Chloro-3-methylphenol	1/55	170.00 to 170.00	170.00	NP
4-Methylphenol	3/55	1,300.00 to 3,500.00	2,766.67	NP
Di-n-butylphthalate	4/55	59.00 to 110.00	89.25	NP
Di-n-octylphthalate	1/55	71.00 to 71.00	71.00	NP
N-Nitrosodiphenylamine	1/55	49.00 to 49.00	49.00	NP
Naphthalene	3/55	100.00 to 340.00	186.67	NP
Phenanthrene	3/55	46.00 to 68.00	59.67	NP
Phenol	3/55	1,400.00 to 3,500.00	2,800.00	NP
bis(2-Ethylhexyl)phthalate	42/55	40.00 to 2,300.00	391.88	NP

Pesticides and PCBs (I/kg)

Aroclor-1250	3/56	30.00 to 140.00	83.33	NP
4,4-DDE	4/56	1.10 to 20.00	8.95	NP
4,4-DOT	2/56	4.50 to 6.00	5.30	NP

Table 5-2 (Continued)
Analytes Detected in Subsurface Soil, PSC 1

Inorganic Analytes (mg/kg)

Aluminum	56/56	2,580.00 to 61,900.00	13,758.39	48,200
Antimony	14/56	3.70 to 21.30	6.18	NA
Arsenic	49/56	0.60 to 40.00	5.16	3.3
Barium	56/56	2.90 to 911.00	65.87	325
Beryllium	47/56	0.05 to 14.20	1.38	11.6
Cadmium	10/56	0.94 to 15.30	7.54	7.5
Calcium	52/56	47.50 to 411,000.00	14,475.35	102,000
Chromium	56/56	3.30 to 53.50	14.49	105
Cobalt	54/56	0.98 to 79.40	11.86	72.3
Copper	43/56	0.56 to 49.80	10.80	36.3
Cyanide	1/56	0.17 to 0.17	0.17	NA
Iron	56/56	1,780.00 to 164,000.00	26,463.21	48,800
Lead	55/56	1.70 to 253.00	23.61	52.9
Magnesium	56/56	24.30 to 2,990.00	457.59	2,980
Manganese	54/56	1.40 to 9,280.00	1,050.28	3,190
Mercury	30/56	0.02 to 0.15	0.05	0.15
Nickel	34/56	1.50 to 81.30	20.51	45.3
Potassium	28/56	131.00 to 3,010.00	693.96	1,940
Selenium	11/56	0.01 to 6.00	1.66	0.58
Sodium	21/56	7.10 to 77.00	24.65	203
Thallium	2/56	0.66 to 1.20	0.93	1
Vanadium	56/56	9.60 to 158.00	60.93	133
Zinc	55/56	0.46 to 216.00	27.11	130

Notes: PSC = Potential Source of Contamination.
Ig/kg = micrograms per kilogram.
PCBs = polychlorinat9d biphenyls.
DDE = dichlorodiphenyldichloroethene.
DDT = dichlorodiphenyltrichloroethene.
mg/kg = milligrams per kilogram.
NA = not analyzed.
NP = not applicable.

SVOCs and pesticides were detected in the surface and subsurface soil in one isolated area of PSC 2. These compounds have not moved from the site and typically degrade rapidly. Inorganics detected in the surface and subsurface soil were similar to site background data. No significant contamination was detected in the sediment and surface water samples collected at PSC 2. No analytes were detected that would indicate an ongoing source of contaminants to the surface and subsurface soil, surface water, and sediment. Sampling results for surface and subsurface soil, surface water and sediment are presented in Tables 5-3 through 5-6. No other sources or potential sources of contamination were identified at PSC 2.

5.4.3 PSC 3. Long-Term. Landfill PSC 3, a former solid waste landfill, was reportedly used for the disposal of solvents, paints, thinners, strippers, dichlorodiphenyltrichloroethane, sludges, PCBs, garbage, and paper from 1954 to 1988. Landfill operations included burning of disposal materials until the early 1970s. The landfill was subsequently closed in 1988 in accordance with the State of Georgia Solid Waste Regulations. Closure included the installation of a soil cover on the landfill and revegetation. As a result of the landfill operations, contamination is present in subsurface soil beneath PSC 3. Pesticides and one PCB detected in the surface and subsurface soil are likely due to historical road maintenance activities and historical waste disposal activity, respectively. Surface water and sediment contained the same low concentrations of pesticides, and PCBs found in the surface soil are likely due to surface water runoff associated with road maintenance activities. Sampling results for surface and subsurface soil, surface water, and sediment are presented in Tables 5-7 through 5-10.

Samples from the PSC 3 sludge piles were collected at the surface, in the middle of the pile, and at the bottom of the pile where the sludge and the landfill cover meet. Inorganics and PCBs were detected in the sludge, with the highest concentrations located in the middle of the pile. Analytical results from sampling the sludge piles in May 1996 are presented in Table 5-11. These data are similar to the chemicals found in the sludge from the industrial wastewater treatment plant onbase.

The PSC 3 sludge piles were found to contain elevated concentrations of inorganic chemicals. Exposure to these chemicals was found to pose unacceptable human health risks, As a result, the sludge piles were removed under a Time-Critical Removal Action to eliminate the potential release of contaminants and were disposed of at a permitted off-site disposal facility in May 1996. Following removal of the sludge, confirmatory sampling was performed. Confirmatory sampling results indicated elevated metals concentrations in the newly exposed landfill soil cover, likely due to leaching from the sludge piles. Further excavation to remove the contaminated soil would have disturbed the PSC 3 landfill cover. The GEPD, USEPA Region IV, and the Navy agreed to replace the landfill soil cover. As a result, 16 inches of certified clean fill was placed over the excavated area, thereby restoring the solid waste landfill soil cover. The disturbed areas were then revegetated with native grass. The reconstruction of the landfill soil cover eliminated the surface soil exposure pathway and the associated human health risks.

5.4.4 PSC 26, Containment Berm Area PSC 26 was discovered during the field investigation of PSC 3 as a possible source contributing to the groundwater contamination present at PSC 3. Aerial photographs indicate that the surface of this area was disturbed some time between 1957 and 1964. Three disturbed areas and a berm were identified in the aerial photographs as shown on Figure 1-4. The exact construction and use of the berm at PSC 26 have not yet been determined. Visual inspection of the berm indicates the area may have been used as a disposal area; however, field investigations of this area disclosed no evidence that chemical wastes were ever disposed of within the berm. The area has not been used since approximately 1964 and has subsequently become overgrown with vegetation.

Low concentrations of VOCs, SVOCs, and inorganics were found in both surface and subsurface soils at PSC 26. The VOCs and SVOCs detected in the surface soil (26SS01, Figure 2-4) were confirmed through the collection and analysis of a duplicate surface soil sample (26SS01D) . Based on these results, four additional surface soil samples were collected from locations 10 feet offset from the original sampling location (26SS07 through 26SSIO, Figure 2-4). Analytical results for this new sampling event found low concentrations of VOCs present in three of the four offset surface soil samples, while no SVOCs were detected. Based on these RI results, the VOCs, SVOCs, and inorganics present at PSC 26 are potentially due to past disposal activities. Pesticides and PCBs were not detected at PSC 26. Sampling results for surface and subsurface soil are presented in Tables 5-12 and 5-13, respectively. No surface water or sediment was found at PSC 26, and no other sources or PSCs were identified at PSC 26.

Table 5-3
Analytes Detected in Subsurface Soil, PSC 2

Analyte	No. of Samples in Which the Analyte is Detected/Total No. of Samples	Range of Detected Concentrations	Mean Concentration	Maximum Background Concentration
Volatile Organic Compounds (Ig/kg)				
Acetone	3/21	13.00 to 19.00	16.67	NP
Semivolatile Organic Compounds (Ig/kg)				
Benzo(a)anthracene	1/21	81.00 to 81.00	81.00	NP
Benzo(a)pyrene	1/21	100.00 to 100.00	100.00	NP
Benzo(b)fluoranthene	1/21	95.00 to 95.00	95.00	NP
Benzo(k)fluoranthene	1/21	100.00 to 100.00	100.00	NP
bis(2-Ethylhexyl)phthalate	5/21	46.00 to 65.00	56.60	NP
Chrysene	1/21	91.00 to 91.00	91.00	NP
Diethylphthalate	5/21	39.00 to 54.00	46.80	NP
Fluoranthene	3/21	68.00 to 140.00	92.00	NP
Phenanthrene	1/21	50.00 to 50.00	50.00	NP
Pyrene	3/21	61.00 to 140.00	89.67	NP
Pesticides and PCBs (Ig/kg)				
alpha-Chlordane	4/28	280.00 to 390.00	330.00	NP
gamma-Chlordane	4/28	220.00 to 270.00	242.50	NP
4,4-DDE	13/28	1.40 to 1,800.00	505.40	NP
4.4-DDT	9/28	3.80 to 8,000.00	3,177.09	NP
Heptachlor epoxide	1/28	27.00 to 27.00	27.00	NP

Inorganic Analytes (mg/kg)

Aluminum	20/20	1,540.00 to 15,500.00	8,099.00	19,300
Antimony	2/20	3.50 to 3.80	3.65	4.2
Arsenic	20/20	0.73 to 2.70	1.58	31.4
Barium	20/20	9.10 to 35.30	18.15	378
Beryllium	20/20	0.08 to 0.35	0.19	0.76
Calcium	15/20	67.60 to 1,250.00	424.21	1,040
Chromium	20/20	2.20 to 24.60	11.93	286
Cobalt	20/20	0.66 to 2.90	1.70	27.8
Copper	19/20	0.72 to 7.50	3.71	11.2
Iron	20/20	1,810.00 to 27,200.00	13,038.50	25,300
Lead	20/20	6.00 to 154.00	20.25	96.3
Magnesium	20/20	43.90 to 240.00	108.06	261
Manganese	20/20	42.40 to 732.00	209.05	8,740
Mercury	13/20	0.02 to 0.06	0.04	0.09
Nickel	6/20	1.50 to 3.20	2.50	8.7
Potassium	2/20	118.00 to 130.00	124.00	221
Selenium	4/20	0.74 to 0.92	0.82	1.8
Silver	1/20	0.45 to 0.45	0.45	1.2
Sodium	10/20	5.40 to 14.90	9.02	107
Vanadium	20/20	5.00 to 67.90	33.64	59.9
Zinc	20/20	1.80 to 23.60	7.77	13.9

Notes: PSC = Potential Source of Contamination.
Ig/kg = micrograms per kilogram.
PCBs = polychlorinated biphenyls.
DDE = dichlorodiphenyldichloroethene.
DDT = dichlorodiphenyltrichloroethane.
mg/kg = milligrams per kilogram.
NP = not applicable.

Table 5-4
Analytes Detected in Subsurface Soil, PSC 2

Analyte	No. of Samples in Which the Analyte is Detected/Total No. of Samples	Range of Detected Concentrations	Mean Concentration	Maximum Background Concentration
Volatile Organic Compounds (Ig/kg)				
Acetone	3/9	55.00 to 4,400.00	2,451.87	NP
Semivolatile Organic Compounds (Ig/kg)				
bis(2-Ethylhexyl)phthalate	7/9	40.00 to 460.00	167.86	NP
Di-n-butylphthalate	1/9	41.00 to 41.00	41.00	NP
Inorganic Analytes (mg/kg)				
Aluminum	9/9	1,890.00 to 20,800.00	8,324.44	48,200
Antimony	1/9	3.60 to 3.60	3.60	NA
Arsenic	7/9	0.48 to 2.40	1.41	3.3
Barium	9/9	3.40 to 61.60	19.03	325
Beryllium	8/9	0.05 to 6.80	1.14	11.6
Cadmium	5/9	0.60 to 4.10	1.37	7.5
Calcium	8/9	60.20 to 368,000.00	46,574.15	102,000
Chromium	9/9	6.00 to 58.80	19.46	105
Cobalt	5/9	1.10 to 8.40	3.76	72.3
Copper	7/9	1.70 to 20.20	8.41	36.3
Iron	9/9	2,230.00 to 26,900.00	16,492.22	48,800
Lead	9/9	3.10 to 28.00	10.36	52.9
Magnesium	9/9	38.40 to 1,370.00	306.01	2,980
Manganese	9/9	16.60 to 495.00	185.24	3,190
Mercury	9/9	0.02 to 0.23	0.06	0.15
Nickel	6/9	3.40 to 9.00	6.02	45.3
Potassium	6/9	51.90 to 613.00	197.83	1,940
Selenium	2/9	0.17 to 0.84	0.51	0.58
Sodium	7/9	7.20 to 245.00	148.70	203
Thallium	2/9	0.24 to 0.53	0.39	1
Vanadium	9/9	12.00 to 65.50	36.83	133
Zinc	8/9	0.68 to 39.40	12.40	130

Notes: PSC = Potential Source of Contamination.
Ig/kg = micrograms per kilogram.
mg/kg = milligrams per kilogram.
NA = not analyzed.
NP = not applicable.

Table 5-5
Analytes Detected in Subsurface Soil, PSC 2

Analyte	No. of Samples in Which the Analyte is Detected/ Total No. of Samples	Range of Detected Concentrations	Mean Concentration	
Volatile Organic Compounds (Ig/l)				
Acetone	2/2	7.00 to 15.00	11.00	
Inorganic Analytes (Ig/l)				
Aluminum	2/2	407.00 to 1,810.00	1,108.50	
Arsenic	1/2	1.10 to 1.10	1.10	
Barium	2/2	18.70 to 25.60	22.15	
Calcium	2/2	2,410.00 to 3,170.00	2,790.00	
Copper	2/2	1.60 to 3.20	2.40	
Iron	2/2	598.00 to 2,370.00	1,484.00	
Lead	1/2	1.80 to 1.80	1.80	
Magnesium	2/2	754.00 to 1,230.00	992.00	
Manganese	2/2	68.70 to 138.00	103.35	
Potassium	2/2	869.00 to 1,810.00	1,339.50	
Sodium	2/2	492.00 to 895.00	693.50	
Vanadium	1/2	5.00 to 5.00		5.00
Zinc	1/2	10.60 to 10.60	10.60	

Note: PSC = Potential Source of Contamination.
Ig/l = micrograms per liter.

Table 5-6
Analytes Detected in Subsurface Soil, PSC 2

Analyte	No. of Samples in Which the Analyte is Detected/ Total No. of Samples	Range of Detected Concentrations	Mean Concentration
Semivolatile Organic Compounds (Ig/kg)			
Benzo(a)anthracene	1/2	58.00 to 58.00	58.00
Benzo(a)pyrene	1/2	37.00 to 37.00	37.00
Benzo(b)fluoranthene	1/2	68.00 to 68.00	68.00
Benzo(k)fluoranthene	1/2	50.00 to 50.00	50.00
Ruoranthene	1/2	90.00 to 90.00	90.00
Indeno(1,2,3-cd)pyr9ne	1/2	47.00 to 47.00	47.00
Pyrene	1/2	79.00 to 79.00	79.00
Pesticides and PCBs (Ig/kg)			
4,4-DOD	2/2	2.40 to 220.00	111.20
4,4-DDE	2/2	51.00 to 120.00	85.50
4,4-DDT	2/2	31.00 to 32.00	31.50

Inorganic Analytes (mg/kg)

Aluminum	2/2	11,000.00 to 25,200.00	18,100.00
Arjenic	2/2	1.70 to 2.50	2.10
Barium	2/2	21.90 to 51.30	36.60
Beryllium	2/2	0.30 to 0.46	0.38
Calcium	2/2	802.00 to 1,990.00	1,396.00
Chromium	2/2	22.W to 40.80	31.70
Cobalt	2/2	5.30 to 6.00	5.65
Copper	2/2	2.90 to 5.00	3.95
Iran	2/2	25,700.00 to 32,000.00	28,850.00
Lead	2/2	16.90 to 23.50	20.20
Magnesium	2/2	230.00 to 997.00	613.50
Manganese	2/2	183.00 to 340.00	261.50
Mercury	2/2	0.02 to 0.06	0.04
Nickel	1/2	4.10 to 4.10	4.10
Potassium	2/2	124.00 to 389.00	256.50
Selenium	1/2	1.30 to 1.30	1.30
Sodium	2/2	7.70 to 19.70	13.70
Vanadium	2/2	51.30 to 101.00	76.15
7inc	2/2	13.90 to 36.10	25.00

Notes: PSC = Potential Source of Contamination.
Ig/kg = micrograms per kilogram.
PCBs =polychlorinated biphenyls.
DDD = dichlorodiphenyldichloroethane.
DDE = dichlorodiphenyldichloroethene.
DDT = dichlorodiphenyltrichloroethane.
mg/kg = milligrams per kilogram.

Table 5-7
Analytes Detected in Subsurface Soil, PSC 3

Analyte	No. of Samples in Which the Analyte is Detected/Total No. of Samples	Range of Detected Concentrations	Mean Concentration	Maximum Background Concentration
Volatile Organic Compounds (Ig/kg)				
Acetone	7/17	3.00 to 9.00	4.57	NP
Semivolatile Organic Compounds (Ig/kg)				
bis(2-Ethythoxyl)phthalate	2/19	40.00 to 42.00	41.00	NP
Benzo(a)anthracene	1/19	45.00 to 45.00	45.00	NP
Benzo(b)fluoranthene	1/19	65.00 to 65.00	65.00	NP
Berizo(g,hJ)peryleno	1/19	43.00 to 43.00	43.00	NP
Benzo(k)fluoranthens	1/19	78.00 to 78.00	78.00	NP
Chrysene	1/19	55.00 to 55.00	55.00	NP
Ruoranthene	2/19	38.00 to 110.00	74.00	NP
Indeno(1,2,3-od)pyrone	1/19	70.00 to 70.00	70.00	NP
Phenanthrene	1/19	61.00 to 61.00	61.00	NP
Pyrene	1/19	100.00 to 100.00	100.00	NP
Pesticides and PCBs (Ig/kg)				
Aroclor- 1260	8/26	13.00 to 230.00	55.88	NP
alpha-Chlorclane	1/26	0.62 to 0.62	0.62	NP
gamma-Chlordano	1/26	0.56 to 0.56	0.56	NP
4.4-DDD	3/26	1.10 to 9.10	3.77	NP
4,4-DDE	13/26	0.73 to 180.00	18.46	NP
4,4-DDT	5/26	3.60 to 230.00	55.92	NP

Inorganic Analytes (mg/kg)

Aluminum	17/17	3,730.00 to 19,300.00	9,833.53	19,300
Antimony	3/17	6.10 to 11.30	8.40	4.2
Arsenic	16/17	0.62 to 3.20	1.44	31.4
Barium	17/17	7.60 to 296.00	48.11	378
Beryllium	17/17	0.08 to 0.59	0.25	0.76
Cadmium	4/17	0.80 to 6.50	2.66	0.9
Calcium	16/17	31.60 to 9,250.00	1,909.16	1,040
Chromium	17/17	4.00 to 75.30	18.22	286
Cobalt	17/17	0.74 to 5.70	2.50	27.8
Copper	17/17	0.58 to 57.80	11.47	11.2
Cyanide	1/17	0.19 to 0.19	0.19	8.7
Iron	17/17	4,600.00 to 44,400.00	17,067.65	25,300
Lead	17/17	2.10 to 351.00	38.08	96.3
Magnesium	17/17	58.00 to 686.00	255.15	261
Manganese	17/17	14.40 to 707.00	184.38	8,740
Mercury	13/17	0.02 to 0.14	0.05	0.09
Nickel	8/17	2.20 to 19.40	5.65	8.7
Potassium	8/17	116.00 to 374.00	222.88	221
Selenium	4/17	0.12 to 2.50	1.36	1.8
Silver	4/17	0.69 to 1.50	1.12	1.2
Sodium	9/17	8.80 to 245.00	51.61	107
Vanadium	17/17	12.70 to 86.70	40.31	59.9
Zinc	17/17	2.20 to 164.00	37.09	13.9

Notes: PSC = Potential Source of Contamination.
Ig/kg = micrograms per kilogram.
PCBs = polychlorinated biphenyls.
DDD = dichlorodiphenyldichloroethane.
DDE = dichlorodiphenyldichloroethene.
DDT = dichlorodiphenyltrichloroethane.
mg/kg = milligrams per kilogram.
NP = not applicable.

Table 5-8
Analytes Detected in Subsurface Soil, PSC 3

Analyte	No. of Samples in Which the Analyte is Detected/Total No. of Samples	Range of Detected Concentrations	Mean Concentration	Maximum Background Concentration
Volatile Organic Compounds (Ig/kg)				
Acetone	5/26	4.00 to 370.00	91.40	NP
Methylene chloride	5/26	4.00 to 15.00	7.80	NP
Semivolatile Organic Compounds (Ig/kg)				
bis(2-Ethythoxyl)phthalate	2/26	95.00 to 140.00	117.50	NP
Di-n-butylphthalate	2/26	55.00 to 56.00	55.50	NP
Diethylphthalate	2/26	53.00 to 75.00	64.00	NP
Pesticides and PCBs (Ig/kg)				
Aroclor-1260	2/27	230.00 to 290.00	260.00	NP
alpha-Chlordane	1/27	7.00 to 7.00	7.00	NP
gamma-Chlordane	1/27	32.00 to 32-00	32.00	NP
Dieldrin	1/27	2.60 to 2.60	2.60	NP
4,4-DDD	3/27	1.60 to 240.00	84.53	NP
4+DDE	3/27	2.90 to 91-00	34.10	NP

Inorganic Analytes (mg/kg)

Aluminum	26/26	2,090.00 to 27,700.00	11,200.00	48,200
Antimony	3/26	3.90 to 4.50	4.13	NA
Arsenic	24/26	0.26 to 2.50	1.10	3.3
Barium	26/26	1.50 to 390.00	60.72	325
Beryllium	26/26	0.06 to 12.70	1.65	11.6
Cadmium	13/26	0.40 to 22.00	4.29	7.5
Calcium	19/26	82.30 to 359,000.00	37,353.02	102,000
Chromium	26/26	5.50 to 40.90	15.03	105
Cobalt	20/26	0.77 to 233.00	37.01	72.3
Copper	22/26	0.87 to 70.50	17.29	36.3
Cyanide	3/26	0.08 to 2.00	0.86	NA
Iron	26/26	1,540.00 to 58,000.00	20.575.00	48.8W
Load	26/26	1. 10 to 255.00	19.57	52.9
Magnesium	26/25	18. 10 to 2,8W,00	575.44	2,9W
Manganese	26/26	1 .80 to 9,090.01)	1,074.61)	3,190
Mercury	20/26	0.02 to 0.42	0.10	015
Nickel	15/26	2.20 to 186-00	38-65	45.3
Potassium	15/26	81 .00 to 1,880-00	632.71	1,940
Selenium	4/26	0.48 to 3.20	1.52	0.58
Silver	2/26	0.93 to 1.20	1.02	NA
Sodium	16/26	6.40 to 222.00	96.03	2M
Thallium	3/26	0.37 to 1. 10	0.64	1
Vanadium	26/26	13.90 to IN.00	56.95	133
Zinc	26/26	0.49 to 642.00	64.92	130

Notes: PSC = Potential Source of Contamination.
Ig/kg = micrograms per kilogram.
PCBs polychlorinatod biphenyls.
DDD = dichlorodiphonyidichloroothans.
DDE = dichiorodiphonyidichloroothens.
mg/kg = milligrams per kilogram.
NA = not analyzed.
NP = not applicable.

Table 5-9
Analytes Detected In Surface Water, PSC 3

Record of Decision
Operable Unit 1
Marine Corps Logistics Base
Albany, Georgia

Analyte	No. of Samples in Which the Analyte is Detected/ Total No. of Samples	Range of Detected Concentrations	Mean Concentration
Volatile Organic Compounds (Ig/kg)			
Acetone	2/6	10.00 to 25.00	17.50
Pesticides and PCBs (Ig/kg)			
4.4-DDT	1/6	0.07 to O.07	0.07
Inorganic Analytes (mg/kg)			
Aluminum	6/6	496.00 to 4,670.00	1,768.93
Antimony	1/6	12.90 to 12.90	12.90
Arsenic	4/6	0.90 to 1.50	1.20
Barium	6/6	24.10 to 56.10	34.55
Beryllium	4/6	0.54 to 0.79	0.61
Cadmium	2/6	1.20 to 1.30	1.25
Calcium	6/6	4,9W.00 to 10,900.00	7,253.33
Chromium	1/6	5.20 to 5.20	5.20
Copper	6/6	4.50 to 10.70	6.73
Iron	6/6	2,230.00 to 5,660-00	3,525-00
Lead	6/6	2.00 to 6.40	4.07
Magnesium	6/6	1,030.00 to 2, 190.00	1.500.00
Manganese	6/6	77.80 to 411.00	212.33
Nickel	1/6	11.50 to 11.50	11.50
Potassium	6/6	1,710.00 to 3,470.00	2,418.33
Selenium	1/6	0.69 to 0.69	0.69
Sodium	5/6	544.00 to 2,440.00	1,684.80
Vanadium	6/6	2.00 to 16.60	6.57
Zinc	6/6	17.60 to 283.00	126.08

Notes: PSC Potential Source of Contamination.
pg/1 micrograms per liter.
PCBs polychlorinated biphenyls.
DDT = dichlorodiphonyhdchloroethane.

Table 5-10
Analytes Detected In Sediment, PSC 3

Analyte	No. of Samples in Which the Analyte is Detected/ Total No. of Samples	Range of Detected Concentrations	Mean Concentration
Volatile Organic Compounds (Ig/kg)			
Acetone	2/10	3.00 to 13.00	8.00
Semivolatile Organic Compounds (Ig/kg)			
Benzo(a)anthracene	1/8	47.00 to 47.00	47.00
Benzo(a)pyrene	1/8	39.00 to 39-00	39-00
Benzo(b)ftuoranthens	1/8	69.00 to 69.00	69-00
Benzo(k)fluoranthens	1/8	41.00 to 41.00	41.00
bis(2-Ethylhexyl)phthalate	2/8	42.00 to 50.00	46.00
Chrysene	1/8	68.00 to 68.00	68.00
Di-n-octylphthalate	1/8	55.00 to 55.00	55-00
Fluoranthene	1/8	110.00 to 110.00	110.00
Phenanthrene	1/8	50.00 to 50.00	50-00
Pyrene	1/8	91.00 to 91.00	91-00

Pesticides and PCB* (Ig/kg)

Aroclor-1260	6/10	67.00 to 1,300-00	537-33
alpha-Chlordane	2/10	2.60 to 3.40	3.00
gamma-Chlordane	3/10	2.40 to 4.60	3.47
Dieldrin	1/10	12.00 to 12.00	12.00
4,4-DDD	7/10	5.10 to 210.00	61-36
4,4-DDE	8/10	71.00 to 340.00	139-88
4+DDT	8/10	5.10 to 1,100-00	179.86

Inorganic Analytes (mg/kg)

Aluminum	10/10	3,660.00 10 27,000.00	13,684.00
Antimony	2/10	7. 10 to 7.70	7.40
Arsenic	8/10	1.20 to 6.20	3.59
Barium	10/10	14.90 to 181.00	58.30
Beryllium	9/10	0.08 to 0.50	0.29
Cadmium	5/10	0.66 to 4.20	2.21
Calcium	10/10	129.00 to 9,550.00	2,528.20
Chromium	10/10	5.20 to 133.00	30.09
Cobalt	8/10	0.89 to 5.50	3.09
Copper	10/10	1.90 to 24.20	10-99
Cyanide	3/10	0.72 to 3.80	1.83
Iron	10/10	449.00 to 43,000-00	16,499.20
Lead	10/10	2.80 to 220.00	66.17
Magnesium	10/10	69.50 to 778.00	346.21
Manganese	10/10	11.40 to 800.00	229.55
Mercury	7/10	0.02 to 0.13	0.07
Nickel	5/10	4.10 to 11.00	7.90
Potassium	7/10	67.30 to 402.00	254.33
Selenium	4/10	0. 13 to 1.20	0.70
Sodium	8/10	5. 10 to 333.00	124.83
Thallium	1/10	0.19 to 0.19	0.19
Vanadium	10/10	3.50 to 110.00	45.91
Zinc	10/10	8.00 to 178.00	72.90

Notes: PSC = Potential Source of Contamination.
Ig/kg = micrograms per kilogram.
PCBs polychlorinatod biphenyls.
DDD = dichlorodiphonyidichloroethane.
DDE = dichiorodiphonyidichloroethene.
mg/kg = milligrams per kilogram.
NA = not analyzed.
NP = not applicable.

Table 5-11
Analytes Detected in Sludge, PSC 3

Analyte	No. of Samples in Which the Analyte is Detected/ Total No. of Samples	Range of Detected Concentrations	Mean Concentration
Volatile Organic Compounds (Ig/kg)			
Acetone	7/10	10.00 to 100.00	62.43
Methylene chloride	1/10	59.00 to 59.00	59-00
Toluene	2/10	3.00 to 4.00	3.50
Semivolatile Organic Compounds (Ig/kg)			
bis(2-Ethylhexy1)ph1halate	3/3	2,400.00 to 5900.00	3,733.33
4-Chloroaniline	3/3	430.00 to 3200.00	1,610.00
Pesticides and PCB* (Ig/kg)			
Aroclor-1260	10/10	11.00 to 2400.00	1,101-50
alpha-Chlordane	10/10	1.90 to 220.00	128-64
gamma-Chlordane	10/10	1.60 to 200.00	111.77
Dieldrin	8/10	12.00 to 130.00	53-88
44-ODD	9/10	1.10 to 110.00	57.134
4,4-DDE	10/10	3.70 to 480.00	144.54
4+DDT	1/10	2.20 to 2.20	2.20

Inorganic Analytes (mg/kg)

Aluminum	10/10	7,160.00 to 20".00	13,500.00
Antimony	5/10	6.70 to 21.60	13,36
Arsenic	10/10	2.30 to 10.70	6.32
Barium	10/10	19-50 to 1310-00	743.59
Beryllium	10/10	0. 18 to 0.56	0.37
Cadmium	10/10	0.84 to 167.00	66.71
Calcium	10/10	685.00 to 14000.00	7,553.50
Chromium	10/10	21.40 to 4510.00	1,628.85
Cobalt	8/10	1.50 to 10.80	5.05
Copper	10/10	11.30 to 865.00	503.94
Cyanide	7/10	1.40 to 10.60	3.56
Iron	10/10	17,000.00 to 33,6DD.00	23,810.00
Lead	10/10	9.70 to 1,120.00	562.05
Magnesium	10/10	104.00 to 2,320.00	1,238.60
Manganese	10/10	35.50 to 5M.00	222.66
Mercury	8/10	0.15 to 9.10	5.97
Nickel	10/10	3.60 to 36-40	18-83
Potassium	7/10	461.00 to 1,050.00	783.43
Selenium	7/10	1.50 to 5.90	3.67
Silver	9/10	1.90 to 327.00	110.13
Sodium	3/10	58-20 to 88,60	73.83
Vanadium	10/10	18.00 to 56.40	33.36
Zinc	10/10	126.00 to 4,400.00	1,840.40

Notes: PSC = Potential Source of Contamination.
Ig/kg = micrograms per kilogram.
PCBs polychlorinatod biphenyls.
DDD = dichlorodiphonyidichloroethane.
DDE = dichiorodiphonyidichloroethene.
mg/kg = milligrams per kilogram.

Table 5-12
Analytes Detected in Surface Soil, PSC 26

Analyte	No. of Samples in Which the Analyte is Detected/Total No. of Samples	Range of Detected Concentrations	Mean Concentration	Maximum Background Concentration	
Volatile Organic Compounds (Ig/kg)					
Acetone	1/10	33	33	NP	
Carbon Tetrachloride	1/10	2	2	NP	
Chloroform	2/10	4 to 5	4.5	NP	
Tetrachloroethene	4/10	5 to 12	8.5	NP	
Trichloroethens	4/10	15 to 32	20.8	NP	
Xylenes (total)	1/10	5	5	NP	
Semivolatile Organic Compounds (Ig/kg)					
Anthracene	2/11	150 to 270	210	NP	
Benzo(a)anthracene	2/11	1. 100 to 2,400	1,750	NP	
Benzo(a)pyrene	2/11	1,000 to 2,100	1,550	NP	
Benzo(b)fluoranth*ne	2/11	1,300 to 2,800	2,050	NP	
Benzo(g,hJ)perylene	2/11	WO to 1,300	950	NP	
Benzo(k)fluoranthens	2/11	1,000 to 1,900	1,450	NP	
Carbazole	2/11	140 to 260	200	NP	
Chrysene	2/11	1,200 to 2,300	1,750	NP	
Di-n-octylphthalate	1/11	480	480	NP	
Dibenzo (a,h)anthraoene	2/11	260 to 580	410	NP	
Ruoranthene	2/11	2,000 to 4,300	3,150	NP	
Indeno(1,2,3-od)pyrone	2/11	630 to 1,300	9155	NP	
Phenanthrens	2/11	SIX) to 1 low	1,200	NP	
Pyrone	2/11	1,000 to 2,000	1,500	NP	

Inorganic Analytes (mg/kg)

Antimony	1/7	6.1	6.10	4.2
Arsenic	7/7	4.6 to 6.9	5.60	31.4
Barium	7/7	22 to 235	57.43	378
Beryflium	7/7	0.53 to 0.94	0.70	0.75
Calcium	7/7	463 to 12,500	3,393-W	0.7
Chromium	7/7	21.40 to 40.90	33.09	148.55
Cobalt	7/7	3.10 to 30.50	8.86	27.8
Copper	7/7	8.30 to 1111. 10	12.20	11.2
Iron	7/7	19,500 to 43,8W	27,342.86	18.50D
Lead	7/7	10.40 to 117	56.21	96.3
Magnesium	7/7	190 to ZW	9W.71	261
Manganese	7/7	41.70 to 3,760	7115.76	8.740
Nickel	6/7	4.20 to 9A0	7.35	8.7
Potassium	6/7	237 to 2,2DO	653	326
Wonium	6/7	0.59 to 0.91	.77	1.8
Vanadium	7/7	38.4 to 85.1	57.34	51.5
Zinc	7/7	13.90 to 90.10	34.89	12.8

Notes; Background database includes background samples from Operable Unit 4.

PSC = Potential Scums of Contamination.
Ig/kg micrograms per kilogram.
mg/kg milligrams per kilogram.
NP = not applicable.

Table 5-13
Analytes Detected in Subsurface Soil, PSC 26

Analyte	No. of Samples in Which the Analyte is Detected/Total No. of Samples	Range of Detected Concentrations	Mean Concentration	Maximum Background Concentration	
Volatile Organic Compounds (Ig/kg)					
Acetone	8/82	6 to &W	177-25	NP	
Carbon Tetrachloride	5/82	2 to 8	4.80	NP	
Chloroform	4/82	2 to 6	4.25	NP	
Methylene chloride	6/82	3 to 9	4.67	NP	
Trichloroethene	5/82	1 to 18	5.40	NP	
Xylenes (total)	1/82	1	1	NP	
Semivolatile Organic Compounds (Ig/kg)					
Di-n-butylphthalate	7/53	350 to 4. 100	1,657.14	NP	
Hexachlorobenzene	1/53	910	910	NP	
Pentachlorophenol	1/53	580	580	NP	
bis(2-Ethythoxyl)phthalate	15/63	170 to 13,000	3,066.67	NP	

Inorganic Analytes (mg/kg)

Aluminum	53/53	262 to 79,600	32,401.23	48,200
Antimony	1/53	8.60	8.60	4.2
Arsenic	43/53	0.91 to 12.20	4.65	3.3
Barium	51/53	4.50 to 577	69.97	325
Beryllium	51/53	0.14 to 107	5.72	11.6
Cadmium	21/53	0.76 to 22	5.134	16.4
Calcium	51/53	119 to 398,000	28,691.61	281,000
Chromium	53/53	4.50 to 104	38-92	105
Cobalt	43/53	0.70 to 424	24.61	72.3
Copper	50/53	0.71 to 126	16.75	46.4
Iron	53/53	647 to 104,000	38,764.13	46,700
Land	53/53	0.56 to 148	17.46	52.9
Magnesium	53/53	141 to 6,140	1,320.34	2,980
Manganese	53/53	13.2 to 5,920	1,040.45	6.640
Mercury	50/53	0.01 to 0.34	0-06	0.16
Nickel	41/53	2.50 to 483	43.38	91
Potassium	47/53	101 to 3,670	910.26	1,940
Selenium	34/53	0.54 to 5.70	1.47	0.58
Sodium	11/63	6.80 to 122	37.31	245
Thallium	32/53	0.30 to 2.30	0.88	1.7
Vanadium	53/53	4 to 237	92-44	133
Zinc	53/53	2.60 to 245	47.19	208

Notes: Background database includes background samples from Operable Unit 4.

PSC = Potential Source of Contamination.
pg/kg micrograms per kilogram.
mg/kg milligrams per kilogram.
NP - not applicable.

6.0 SUMMARY OF SITE RISKS AND RESPONSE ACTIONS

The OU 1 RI analytical data were evaluated to determine whether the individual compounds were site related (i.e. , resulting from historical waste disposal practices) or consistent with base background data. Based on this evaluation, a list of chemicals of potential concern (CFCs) was developed for each medium investigated at OU 1. Tables 6-1 through 6-4 present the CPCs for each PSC and medium. These CFCs were then evaluated within the baseline RA to determine the need for a response action.

6.1 OU 1 BASELINE RA.' An RA was prepared for preexisting conditions (e.g., prior to the removal of the sludge piles from PSC 3) at OU 1 in accordance with the USEPA Risk Assessment Guidance. This guidance reflects a conservative approach to risk assessment to ensure that subsequent cleanup decisions are protective of human health and the environment. The RA estimates or characterizes the potential present and future risks to human health and the environment. Three factors were considered when evaluating the risks associated with OU 1:

The extent of contamination present at the site and surrounding areas.

The pathways through which people and the environment are or may potentially be exposed to contaminants at the site.

The potential toxic effects of site contaminants on humans and the environment.

Exposure pathways considered for the human health portion of the RA include ingestion, skin contact, and inhalation. These pathways were then applied to a current land-use scenario in which an older child trespasses on OU 1. A potential future land use of OU 1 involving residential development and associated utility construction was also considered.

The ecological portion of the RA assumed that animals would be exposed directly to surface soil, surface water, and sediment, with additional exposure from eating other animals and plants that may contain stored contaminants.

The human health portion of the RA evaluated both cancer and noncancer risks. According to the NCP for Superfund sites, the acceptable cancer risk range is from 1 in 10,000 (IX10-4) to 1 in 1 million (lxlO-6) depending on site-specific conditions. Although the estimated risk of lxlO-6 is the point of departure in determining the need for a response action, site-specific conditions at OU 1 indicate that application of the acceptable risk range is appropriate. These conditions include a perimeter fence around the entire installation, restricting public access to the soil, surface water, and sediment. For noncancer risks, the similar point of departure is a hazard index (HI) greater than 1. It the total estimated noncancer risk exceeds one, then site-specific conditions and effects from individual compounds are evaluated to determine if a response is necessary.

6.1.1 PSCs 1 and 2 Human health and environmental risks associated with the exposure to surface and subsurface soil vo-re evaluated in the RA ae PSCs 1 and 2. The sediment at PSC 1 and sediment and surface water present at PSC 2 did not contain CFCs requiring risk evaluation. Tables 6-5 and 6-6 present the human health RA results for each medium and the potential exposure scenario. These data indicate that risks associated with PSCs 1 and 2 are acceptable to the USEPA. The ecological portion of the RA (Ecological Risk Assessment [ERAJ) indicated that adverse effects for small mammals and birds associated with exposure to contaminants in surface soil at both PSCs 1 and 2 are possible, but unlikely. Based on the RA, an NA decision is proposed for PSCs 1 and 2.

Table 6-1
Chemicals of Potential Concern at PSC 1
Operable Unit 1

Chemicals	Human Health		Ecological	
	Surface Soil		Subsurface Soil	Surface Soil
Semivolatile Organic Compounds				
bis(2-Ethylhexyi)phthalate			x	
Di-n-butylphthalate		x		
Pentachlorophenol		x		
4-Chloro-3-mothylphonol	x			
Peaticicles				
4.4'-DDE	x			
Inergenic Anal~				
Aluminum		x		
Antimony	x			
Arsenic	x			
Chromium	x		x	
Load x	x		x	
Vanadium	x		x	
Zinc	x			

Notes: Sediment samples were collected along North Shaw Road. Howrver, no surface water samples were collected as the drainage ditch rarely contains water. Therefore, sediment data were included within surface soil data.

PSC = Potential Source of Contamination.
DDE = dichlorodiphonyidichloroothene.

Table 6-2
Chemicals of Potential Concern at PSC 2
Operable Unit 1

Human Health Surface Soil	Ecological Chemicals Subsurface Soil	Surface Soil
Volade and Semivolado Orpanic Compounds		
Acetone x		
Benzo(a)anthracene	x	
Benzo(a)pyrene	x	
Benzo(b)fluoranthene	x	
Benzo(k)fluoranthens	x	
Chrysene x		
Diethylphthalate	x	
Fluoranthene	x	
Phenanthrene	x	
Pyrene x		
bis(2-Ethylhexyl)phthalate		x
Pesticieles		
4,4'-DDE	x	
4,4'-DDT x	x	
alpha-Chlordane	x	
gamma-Chlordane	x	
Inoroanic Anal~		
Aluminum	x	
Antimony	x	
Copper	x	
Lead x	x	
Vanadium x	x	
Zinc	x	

Notes: The risk assessment identified no chemicals of potential concern from surface water and sediment analytical data.

PSC = Potential Source of Contamination.
DDE = dichlorodiphonyidichloroothene.
DDT = dichlorodiphonytUichloroothane.

Table 6-3
Chemicals of Potential Concern at PSC 3

Human Health		Ecological								
Chemicals	Subsurface Soil		Surface Water		Former Sediment		Surf ace Water		Surface Sediment	
	Surface Soil	Oil	Water	Sludge	Soil					
Vole-de arwl Sen*mlade Grgenk conwounds										
Acetone	x	x	x	x	x	x	x			
Methylene chloride					x			x		
Toluene			x				x			
bis(2-Ethylhoxyl)phthalate					x	x	x	x	x	
Benzo(a)anthracons				x		x				
Benzo(a)pyrene			x							
Benzo(b)fluorandwno				x		x				
Benzo(g,hJ)perylene						x				
Benzo(k)ffuoranthene				x		x				
4-Chloroaniline				x			x			
Chrysene			x		x					
Di-n-octylphthalate				x			x			
Fluoranthene			x		x					
lndeno(1,2,3-cd)pyr*ne						x				
Phenanthfane			x		x					
Pyrone			x		x					
P""" and PCB*										
4,41-DDCI			x	x	x		x			
4,4'-DDE			x	x	x		x			
4,4'-DDT		x	x	x	x	x	x			
Aroclor-12W	x		x	x	x		x			
Dieldrin			x	x			x			

See notes at end of table.

Table 6-3 (Continued)
Chemicals of Potential Concern at PSC 3

Human Health		Ecological										
Chemicals	Surface Soil	SubZrfa,,j	Surface Water	Seclime	ntFormer Sludge		Surface Soil	water	Surface Sediment	Former Sludge		
Peedelklm and PCBw fCon*nwdl												
alpha-Chlordane				x	x	x		x	x			
gamma-Chlordane				x	x	x		x	x			
Inoroanic Anelytee												
Aluminum			x	x	x	x	x	x	x			
Antimony	x	x	x	x	x	x		x	x			
Arsenic			x	x	x				x			
Bariunl~ M			x	x	x	x	x	x	x			
Beryllium	x		x	x	x	x	x	x	x			
Cadmium	x		x	x	x	x	x		x			
Chromium	x		x	x	x	x		x	x			
Cobalt				x	x			x	x			
Copper			x	x	x	x			x			
Cyanide				x	x			x	x			
Iron						x						
Lead	x	x	x	x	x	x	x	x				
Manganese			x	x	x		x	x	x			
Mercup/				x	x	x			x			
Nickel			x	x	x	x			x			
Selenium			x	x	x	x		x	x			

See notes at end of table

Table 6-3 (Continued)
Chemicals of Potential Concern at PSC 3

Human Health				Ecological				
Chemicals	Surface Soil	Subsurface Soil	Surface Sediment	Former Surface Water	Surface Water	Sediment Sediment	Former Sludge	Surface Water
lMg*rAc Anelytes (Con*wWj								
Silver		x	x			x		
Thallium		x			x			
Vanadium	x	x	x	x	x	x	x	x
Zinc	x	x	x	x	x	x	x	

Notes: PSC = Potential Source of Contamination. DDD = dichlorodiphanyidichlotoethane. DDE = dichlorodiphonyidichlofoothene. DDT = dichlorodiphonyftrichloroothans. PCB = polychlodnated blphenyl.

Table 6-4
Chemicals of Potential Concern at PSC 26
Operable Unit 1

Chemicals	Human Health		Ecological	
	Surface Soil		Subsurface Soil	Surface Soil
Volletille and Somlvolatille Orasnic Compounds				
Acetone		x		
Carbon tetrachloride			x	
Chloroform		x		
Tetrachloroethylene			x	
Trichloroethylene			x	
Xyienes (total)			x	
Anthracene	x	x		
Benzo(a)anthracene		x	x	
Benzo(a)pyrene	x		x	
Senzo(b)tluoranthene		x	x	
Benzo(g,hJ)perylene		x	x	
Benzo(k)fluoranthons		x	x	
Carbazole	x	x		
Chrysene	x	x		
Dibenzo(a,h)anthracene		x	x	
Di-n-octylphthalate			x	
Fluoranthene	x		x	
Indeno(i.2,3-ed)pyrene		x	x	
Phenanthrene	x		x	
Pyrene	x	x		
Inorgenic Anal~				
Aluminum	x	x	x	
Arsenic	x	x	x	
Barium		x	x	
Beryllium	x	x	x	
Cadmium		x		
Chromium	x	x	x	
Cobalt		x		
copper		x		
Iron	x	x		

See notes at end of table.

Table 6-4 (Continued)
Chemicals of Potential Concern at PSC 26

Chemicals	Human Health		Ecological
	Surface Soil	Subsurface Soil	Surface Soil
Irvoroanic Analytes (Con*vued)			
Lead		x	
Manganese	x	x	x
Nickel		x	x
Vanadium	x	x	x
Zinc		x	

Note: No surface water or sediment was present at PSC 26.

PSC = Potential Source of Contamination.

Table 6-5
Summary of Potential Risks to Human Health, PSC 1

Land Use	Cancer Risk	Noncancer HI
Current Land Use		
Surface Soil;		
Older Child Trespasser	9.10-10	0.02
Future Land Use		
Surface Soil:		
Resident	4 x 10'	0.24
Subsurface Soil:		
Utility Worker	3 x 10-'	0.11

Notes: No surface water and no chemicals of potential concern from sediment at PSC 1.

PSC = Potential Source of Contamination. HI = hazard index. 3 x 10-7 = 0.0000003 or 3 in 10,000,000.

Table 6-6
Summary of Potential Risks to Human Health, PSC 2

Land Use	Cancer Risk	Noncancer Hl
Current Land Use		
Surface Soil:		
Older Child Trespasser	9 X 10*1	0.05
Future Lard Use		
Surface Soil:		
Resident	9 X to-,	0.50
Subsurface Soil		
Utility Worker	NC	0.06

Notes: The risk assessment identified no chemicals of potential concern in surface water and sediment at PSC 2.

PSC = Potential Source of Contamination.
Hl hazard index.
NC not calculated because there are no carcinogenic chemicals of potential concern in subsurface soil.
9 x 10" = 0.0000009 or 9 in 10,000,000.

6.1.2 PSC 3 The potential risks resulting from exposure to PSC 3 surface and subsurface soil, surface water, sediment and sludge were calculated for current and future land-use scenarios. The cancer and noncancer risks for PSC 3 are summarized in Tables 6-7 and 6-8, respectively. These data indicate that, with the exception of the PSC 3 sludge piles, risks associated with PSC 3 are deemed acceptable by USEPA Region IV.

Based on the ERA, no or minimal adverse effects from exposure to either surface water or sediment by wildlife and plants are anticipated. Elevated risk was estimated for plants and wildlife from exposure to inorganics in surface soil (e.g., cadmium, lead, and zinc). However, adverse effects to ecological receptors from chemicals in PSC 3 surface soil are unlikely given the conservative assumptions incorporated in the ERA.

The PSC 3 sludge piles were found to contain elevated concentrations of inorganic chemicals, including cadmium, chromium, lead, mercury, and silver. Exposure to these chemicals was found to pose unacceptable noncancer risks in both the current child trespasser and potential future residential land use scenarios. As a result, the three sludge piles were removed under a Time-Critical Removal Action down into the landfill soil cover and disposed of at a permitted off-site disposal facility in May 1996 (ABB-ES, 1997b). Following removal of the sludge, confirmatory sampling was performed. Confirmatory sampling results indicated elevated metals concentrations in the newly exposed landfill soil cover, however, further excavation to remove the contaminated soil would have disturbed the PSC 3 landfill cover. Per GEPD, USEPA Region IV, and the Navy's concurrence, certified clean fill was placed over the excavated area, thereby restoring the solid waste landfill soil cover. The disturbed areas were restored and seeded. The reconstruction of the landfill soil cover eliminated the surface soil exposure pathway and associated human health risks. Implementation of the Time Critical Removal Action at PSC 3 reduced the potential threat to human health and the environment from the sludge pile.

6.1.3 PSC 26 In the RI/RA, human health and ecological risks associated with exposure to the contaminated surface and subsurface soils at PSC 26 were evaluated and compared to risk levels as required by the USEPA. The summary of cancer and noncancer risks is shown in Table 6-9. Cancer risks associated with potential exposures to surface and subsurface soil for both current and future land uses were deemed acceptable by the USEPA. The HI value for the child trespasser is less than 1 (HI of 0. 5) and would not warrant a response. However, the PSG 26 surface soil was found to pose a potential noncancer risk (HI of 5) for a future child resident due to the presence of iron and manganese. Based on this potential noncancer risk for a future child resident, a response action at PSC 26 is necessary.

The ERA indicated there is little estimated risk of adverse effects to wildlife at PSC 26 from exposures to inorganics (e.g. , aluminum, manganese, and vanadium) in surface soil. Several inorganic analytes were identified as potentially causing adverse effects to plants, and no analytes were identified as causing adverse effects to soil invertebrates. However, because of the conservativeness of some benchmarks and low magnitude of exceedences, it is unlikely that plants are at risk from chemical exposure at PSC 26. Based on the results of the OU 1 RA, no response actions are required for PSCs 1 and 2; however, response actions are required for PSCs 3 and 26. The RI/RA report (ABB-ES, 1995) and the RI/RA Addendum (ABB-ES, 1997a) detail the OU 1 RA results. The PSC 3 Removal Action Report (ABB-ES, 1997b) details the sludge pile removal from PSC 3. All three documents are available at the MCLB, Albany Environmental Office and Dougherty County Library.

Table 6-7
Summary of Potential Risks to Human Health, PSC 3
Operable Unit 1

Land Use	Cancer Risk	Noncancer HI
Current Land Use,		
Surface Soil:		
Older Child Trespasser	9 X 10,4	0.14
Sediment		
Older Child Trespasser	2 x 10"	0.14
Surface Water:		
Older Child Trespasser	7 x 10-4	0.49
Future Land Use		
Surface Soil.		
Resident	8.104	1.0
Subsurface Soil:		
Utility Worker	1 X 10'a	0.07

Notes: This table does not include the former sludge pile ("a Table 9).

PSC = Potential Source of Contamination.
HI = hazard index.
9 x 10'6 = 0.000009 or 9 in 1,000.000

Table 6-8
Summary of Potential Site Risks to Human Health Before Removal of PSC 3 Sludge Plies, Operable Unit 1

Land Use	Cancer Risk	Noncancer HI
Current Lend Use		
Older Child Trespasser	7 x 10-6	2
Future Land Use		
Resident	8 X 101	24

[Notes: PSC - Potential Source of Contamination.
HI = hazard index.
8x1
~~O` = 0.00008 or 8 in 100,000.

Table 6-9
Summary of Potential Risks to Human Health, PSC 26
Operable Unit 1

Land Use	Cancer Risk	Noncancer HI
Current Land Use		
Surface Sol:		
0lder Child Trespasser	9 X 101	0.5
Future Land Use		
Surface Sol:		
Resident	5 x 10*'	5
Subsurface Sol:		
Utility Worker	5 x 10-'	0.1

Notes: This risk assessment identified no chemicals of potential concern from surface water and sediment at PSC 26.

PSC - Potential Source of Contamination. Hl = hazard index. 5 x 10" = 0.0000005 or 5 in 10,000,000.

6.2 APPLICABLE OR RELEVANT AND APPROPRIATE REOUIRE14ENTS MARS) AND REMEDIAL ALTERNATIVES. A list of ARARs was prepared to determine the appropriate extent of cleanup for each medium at each PSC and to develop remedial action alternatives. The ARARs, presented in Table 6-10, include both Federal and State regulations and guidance criteria. The Superfund Amendments and Reauthorization Act mandate requires that all remedial actions meet ARARs, the NCP, and associated guidance documents. Preferred SARA remedial actions involve treatment that permanently and significantly reduces the toxicity, mobility or volume of the hazardous contaminants.

Following the identification of the ARARs, a list of remedial alternatives was developed for each PSC and compared to the nine IJSEPA screening criteria.

6.2.1 PSCs 1 and 2 Remedial alternative identification and screening was not conducted for PSCs 1 and 2 because the soil, surface water, and sediment at these sites do not pose an unacceptable threat to human health or the environment. As a result, an NA remedy was selected for soil, surface water, and sediment at PSCs 1 and 2.

6.2.2 PSC 3 A Time-Critical Removal Action was implemented at PSC 3 in May 1996 to remove contaminated sludge piles from the surface of the former landfill. This sludge was found to contain elevated concentrations of inorganics that posed an unacceptable risk to a current child trespasser and a potential future resident. This removal action reduced the potential threat to, human health and the environment. However, a response action is still required to protect the integrity of the soil cover on this former solid waste landfill. Remedial alternatives may include no action (in accordance with the NCP) , land-use restrictions and limited action, such as fencing and signs around the perimeter of PSC 3.

6.2.3 PSC 26 Surface soils at PSC 26 were found to pose an unacceptable risk to a potential future resident due to elevated concentrations of inorganics in the surface soils. Potential remedial alternatives to reduce this risk are similar to those considered for PSC 3 - no action, land-use restrictions and limited action.

6.2.4 Evaluation of Remedial Alternatives The three remedial alternatives under consideration for PSCs 3 and 26 were evaluated based on seven criteria, in accordance with USEPA guidance (USEPA, 1988). These criteria are included below.

1. Overall protection of human health and the environment.
2. Compliance with ARARs.
3. Long-term effectiveness and performance.
4. Reductions in toxicity, mobility or volume through treatment.
5. Short-term effectiveness.
6. Implementability.
7. Cost.

Overall Protection of Human Health and the Environment. The Institutional Controls and limited action alternatives will provide the necessary protection for the landfill soil cover at PSG 3 and prevent exposure to the remaining inorganics present in the surface soils of PSC 26. The NA alternative does not meet these criteria.

Compliance with ARARs. The surface and subsurface soil, surface water, and sediment at PSC 3 do not pose an unacceptable risk to human health or the environment, and treatment is not required; however, the integrity of the landfill soil cover must be maintained. Therefore, only the Institutional Controls and limited action alternatives will meet the intent of the ARARs (Table 6-10). The NA alternative will not protect the integrity of the landfill soil cover. As for PSC 26, none of the alternatives will satisfy all of the ARARs because no treatment is proposed for the surface soils at PSC 26. However, the potential unacceptable risk is limited to long-term residential use of the site.

Long-Term Effectiveness and Permanence. The Institutional Controls and limited action alternatives will provide the long-term protection of the landfill soil cover at PSC 3, and reduce exposure of humans to the remaining inorganics present in the surface soils of PSC 26. The NA alternative will not meet these criteria.

Table 6-10
Applicable or Relevant and Appropriate Requirements

Standards, Requirements, Criteria, or Limitations	Citation
Federal	
Clean Air Act (CAA), National Ambient Air Ouality Standards (NAAOS) and National Emissions Standards for Hazardous Air Pollutants	40 CFR 50, 40 CFR 61
USEPA Regulations on Approval and Promulgation of Implementation Plans	40 CFR 52, Subpart L - Georgia
Occupational Health and Safety Act (OSHA) Regulations for Air Contaminants	29 CFR 1910.1000
RCRA General and Location Standards for Permitted Hazardous Waste Facilities	40 CFR 264, Subparts A though F
USEPA Rules for Controlling IPCBs under the Toxic Substances Control Act (TSCA)	40 CFR 761.11M Subpart: D, G and K
Endangered Species Act	16 USC 1531, 50 CFR Parts 81. 225, and 402
RCRA Facility Location Regulations	40 CFR 264.18
RCRA Closure and Postclosure Requirements	40 CFR 264, Subpart G
RCRA Regulations for Generation of Hazardous Waste	40 CFR 262
RCRA Transportation Regulations and DOT Standards	40 CFR 263, 49 CM Parts 171 through 179
RCRA Subtitle D Solid Waste Pogulations	40 CFR 241 and 257
CAA - NAAQS's for Particulates	40 CFR 50
RCRA Standards for Environmental Performance of Miscellaneous Units	40 CFR 264, Subpart X
HCRA Regulations on Land Disposal Phoftictions (Land Ban)	40 CFR 268
RCRA Regulations for Use and Management of Containers	40 CFR 264, Subpart 1
RCRA Regulations for Waste Piles	40 CFR 264, Subpart L
RCRA Incinerator Standards	40 CFR, Subpart 0
OSHA - General Industry Standards, Pawrelk"ping and Reporting, and Standards for Hazardous Waste Site Operations	29 CFR Part IM, 29 CFR Pan 19D4. 29 CFR Part 1910
USEPA Rules for Controlling PCBs under TSCA	40 CFR 761, Subparts D, G, and K
USEPA Solid Waste Management Act	40 CFR 258, Subpart F
Federal Insecticide, Fungicide, and Rodenticide Act (FFRA) and Regulations	40 CFR 165
Fish and Wildlife Coordination Act and FWS and NFWS Advisories	16 USC 661
Fish and Wildlife Conservation Act of 1980	16 USC 2901, 50 CFR Part 83
National Historic Preservation Act	16 USC 470
Archaeological Resources Protection Act	32 CFR Part 229, 43 CFR Parts 107 through 171.5W
Field Manual for Grid Sampling of PCS Spill Sites to Verity C49anup	USEPA.560/WH17

See notes at end of table.

Table 6-10 (Continued)
Applicable or Relevant and Appropriate Requirements

Standards, Requirements, Criteria, or Limitations	Citation
State	
Georgia Air Quality Control Law, and Georgia Air Quality Control Rules Chapter 391-3-1	Code of Georgia, Title 12, Chapter 9 DNR,
Georgia Hazardous Waste Management Act Articles 3 and 60	Code of Georgia, Title 12, Chapter 8,
Georgia Hazardous Waste Management Rules Tito 391. Article 3, Chapter 11	Rules and Regulation of the State of Georgia,
Georgia Comprehensive Solid Waste Management Act Chapter 391-3-4	OCGA Section 124-20 et seq. and Rules,
Endangered Wildlife and Wildflower Preservation Act of 1973 Chapter 391-4-10	OCGA Section 12-&172 et seq. and Rules,

Notes: CFR = Code of Federal Regulations.
DNR = Department of Natural Resources.
DOT = Department of Trunsportation.
NFWS = National Fish and Wildlife Service.
OCGA = Official Code of Georgia Annotated.
PCBs - poiyehlorinated biphenyls.
RCRA = Resource Conservation and Recovery Act.
USEPA = U,S. Environmental Protection Agency.
USC = U.S. Code.
FWS = Fish and Wildlife Service.

Reduction of Toxicity, Mobility or Volume. A removal action was already implemented at PSC 3, eliminating potential mobility of contaminated sludge to humans and the environment. These criteria then are not directly applicable to the goal of protecting the landfill soil cover at PSC 3. None of the proposed remedial alternatives will address the toxicity, mobility or volume of contaminated surface soil at PSC 26.

Short-Term Effectiveness. Institutional Controls and limited action will be effective over the short-term in protecting the landfill soil cover at PSC 3 and restricting residential development and land use of PSC 26. The NA alternative will not satisfy this criteria.

Implementability. Institutional Controls can be readily implemented through ICPs at both PSCs 3 and 26. These plans will become attachments within HCLB, Albany's Master Plan and be indicated on all base maps. There is no implementation required for the NA alternative.

Cost. There are no capital or operational costs associated with the NA and Institutional Control alternatives. The limited action alternative will require the installation of a security fence and signs around the perimeter of PSCs 3 and 26. The estimated cost for this fence and signage is approximately $10 per linear foot. This would result in a capital cost of approximately $70,000 and $55,000 for PSCs 3 and 26, respectively. Estimated maintenance costs for each site would be approximately $2,000 per year for the replacement of damaged or vandalized fencing. This results in a total estimated cost of $170,000 for PSC 3 and $115,000 for PSC 26, over a 30-year period.

The USEPA guidance also requires that the remedial alternatives be evaluated for regulatory acceptance and public acceptance (total of nine criteria) . These evaluations were addressed through the release of the OU 1 Proposed Plan on July 14, 1997, and the 30-day public comment period, ending August 12, 1997. No comments were received from USEPA Region IV, GEPD, or the public during this 30day comment period.

6.3 RESPONSE ACTIONS.

6.3.1 PSCs 1 and 2 Based on the results of the RA, an NA decision is proposed for PSCs 1 and 2. This alternative does not specify any treatment, containment or land-use restrictions for these PSCs.

6.3.2 PSC 3 Based on the identification and evaluation of remedial alternatives presented in Subsection 6.2.3, Institutional Controls will be implemented at PSC 3, the Former Solid Waste Landfill, to protect the integrity of the existing soil cover. Under this ICP, land management activities, such as prescribed burns to reduce the potential for forest fires and the disposal of organic debris, maintenance of existing utility lines will be permitted. Other activities required to ensure adequate protection of human health and the environment may still be conducted at PSC 3. The ICP for PSC 3, provided in Appendix B of this ROD, will be implemented into daily operations of the base through its insertion into the MCLB, Albany Base Master Plan. A review will be conducted within 5 years after implementation of the 1CP to ensure that the remedy continues to provide adequate protection of human health and the environment from the landfill.

6.3.3 PSC 26 The noncancer risk (HI of 5) associated with the future child resident exceeded the USEPA point of departure (HI greater than 1) thereby requiring a response action. As a result of the remedial alternative evaluation, Institutional Controls will be implemented at PSC 26 restricting future residential development and land use of the site (see Appendix C). Land management practices such as maintenance of animal food plots or prescribed burning for fire prevention are allowed under the ICP -for PSC 26. A review will be conducted within 5 years after commencement of remedial action to ensure that the remedy continues to provide adequate

protection of human health and the environment. Other activities required to ensure adequate protection of human health and the environment may still be conducted at PSC 26 under this ICP.

7.0 EXPLANATION OF SIGNIFICANT CHANGES

As lead agency, SOUTHNAVFACENGCOM prepared and issued the Proposed Plan for OU 1 on July 14, 1997. This Proposed Plan described the rationale for a final response of NA at PSCs 1 and 2, and Institutional Controls at PSCs 3 and 26. The GEPD, USEPA Region IV, and public concur with this final response. Therefore, no significant changes were made to the Proposed Plan. This response action may be reevaluated in the future if conditions at OU 1 indicate that an unacceptable risk to public health or the environment would result from exposure to the various media.

REFERENCES

ABB Environmental Services, Inc. (ABB-ES). 1995. Remedial Investigation and Risk Assessment Report for Operable Unit 1, Marine Corps Logistics Base (MCLB), Albany, Georgia. Prepared for Department of the Navy, Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), North Charleston, South Carolina (May).

ABB-ES. 1997a. Remedial Investigation and Risk Assessment Report Addendum for Operable Unit: 1, Marine Corps Logistics Base (MCLB), Albany, Georgia. Prepared for Department of the Navy, SOUTHNAVFACENGCOM, North Charleston, South Carolina (May).

ABB-ES. 1997b. Removal Action Report for PSC 3 Sludge Piles, OU 1, MCLB, Albany, Georgia. Prepared for Department of the Navy, SOUTHNAVFACENGCOM, North Charleston, South Carolina (January).

U.S. Environmental Protection Agency (USEPA). 1988. Guidance for Conducting Remedial Investigations and Feasibility, Studies Under CERCLA. Office of Emergency and Remedial Response. Washington, D.C. (October).

APPENDIX A

COMMUNITY RELATIONS RESPONSIVENESS SUMMARY

1.0 OVERVIEW

Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) held a public Meeting on August 7, 1997, at MCLB, Albany to discuss the Proposed Plan for No Action at PSCs 1 and 2, and Institutional Controls at PSCs 3 and 26 and solicit comments and questions from the public. The meeting was advertised in the Albany Herald on July 18, 1997, and meeting notices were mailed to the MCLB IR community mailing list. Two citizens attended this public meeting and expressed an interest in the process and an appreciation for the work performed by SOUTHNAVFACENGCOM and MCLB, Albany. No written comments or questions were received during the 30-day comment period.

2.0 BACKGROUND OF COMMUNITY INVOLVEMENT

An active community relations program providing information and soliciting input has been conducted by MCLB, Albany for the entire National Priority List (NPL) site. Interviews of citizens onbase and in the city of Albany were conducted in the winter of 1990 to identify community concerns. No significant concerns that required focused response were identified. Most comments received were concerning the potential for contamination of water resources. However, those inter-viewed indicated that they place great trust in MCLB, Albany and their efforts to rectify past waste disposal practices. In addition, the base has formed a Technical Review Committee (TRC) that includes members representing the city of Albany, Dougherty County, and the local academic community. These TRC community members were contacted in July 1996 to determine their continued interest in serving on the committee. Each member confirmed his or her interest in serving on the TRC. In addition, parties on the MCLB, Albany Environmental Branch mailing list were contacted to solicit new community members for the TRC. Since this solicitation, the TRC has grown from 10 to 17 members. Since September 1996, the MCLB, Albany Environmental Branch has held two meetings with the TRC to update them on the status of the investigation, remediation, and closure of the 26 PSCs. The local media have also been kept informed since MCLB, Albany was placed on the NPL. Installation Restoration program fact sheets have been prepared and made available at the Environmental Office of MCLB, Albany. Documents concerning OU 1 are located in the Information Repository at Dougherty County Public Library and the Administrative Record at the Base Environmental Branch office.

3.0 SUMMARY OF PUBLIC COMMENT AND AGENCY RESPONSE

3.1 PUBLIC MEETING

No formal comments were received during the public meeting held on August 7, 1997. Transcripts of the public meeting are provided in Attachment A-1 of this Responsiveness Summary.

3.2 PUBLIC COMMENT PERIOD

The 30-day public comment period was held for the OU 1 Proposed Plan from July 14 to August 12, 1997, at MCLB, Albany. No technical comments or questions were received during the public comment period.

ATTACHMENT A-1

TRANSCRIPTS OF THE
PUBLIC HEARING ON OPERABLE UNIT 1, MARINE CORPS
LOGISTICS BASE, ALBANY, GEORGIA
PUBLIC HEARING ON OPERABLE UNIT 1
HELD AT MARINE CORPS LOGISTICS BASE, ALBANY, GEORGIA
ON THURSDAY, AUGUST 7, 1997 AT 7 P.M.

Lt. Frantz: Tonight, we're here to talk about Operable Unit 1 and the base's proposed plan which we will discuss during this public meeting. And the proposed plan is basically what we propose to do with the sites which we feel are protective of human health and the environment.

1 would like to welcome everybody on behalf of the cleanup and investigation team as well as the Commanding General of our base, Major General Gary S. McKissock. We do have - 1 think we have already made introductions, but we have Mr. Robert Pope from U.S. EPA, Madeleine Kellam and Billy Hendricks from Georgia Environmental Protection Division, Joel Sanders from Southern Division, Naval Facilities Engineering Command. Joel and myself are pretty well in charge of--or responsible for the actions taken at the base and working with the contractors to figure out what's wrong and what we need to do to fix it. We also have with us tonight Jerry Palmer, he is the head of the Environmental Branch on Base, and myself, I'm Alan Frantz. 1 work at the Environmental Branch. We also have with us some of our contracted help; they are engineers, scientists, geologists with ABB Environmental Services, and we have hired these folks to help us characterize the area, the contamination and try to figure out what we need to do to protect human health and the environment. If there are any questions or comments or concerns of any kind, please stop me and we'll discuss them at that time.

The objective of tonight's meeting is to review Operable Unit 1, and the histories of each of the sites that make up Operable Unit 1 of which there are 4 operable units--or PSC's - Potential Source of Contamination 1, 2, 3, and 26. We are going to present the proposed actions we have for each of those sites and we want to get community input on the proposed plan.

Going into the sites themselves, first we have a map of the general location on base where they occurred. Potential Source of Contamination 1 is called our East disposal area. 1 will discuss the areas themselves in a further slide. PSC 2 is a rubble disposal area. PSC was a 38 acre landfill, and PSC 26 is what we call the containment berm area.

Actually, I'm going to go ahead and go over what the sites actually were. PSC 1, the East disposal area, was used for about two years, from approximately 1958 to 1959. The area was used - reportedly received paper, wood, garbage, solvents, paints and thinners. PSC 2, the rubble area - nibble disposal area received surface deposits of, generally, construction debris but it was also reported that thinners, paint solvents, were disposed of at that site also. It is a seven-acre site. The long term landfill, PSC 3, was a trench and fill type landfill used from about '54 to 1988. It received solid waste, municipal waste, solvents, paints, thinners, and other chemicals, including polychlorinated biphenyls. PSC 26, containment berm area, approximately 29 acres in size. We don't have any clear records indicating what the area was actually used for, but the area was investigated because of some
bermed in areas that looked like things had been disposed there and we'll talk about what was found in those areas when we get into the discussion of the findings.

The East disposal area, again, was the one-acre landfill only used for two years. Or one acre disposal area. What we found there were small amounts of organic and inorganic chemicals including pesticides and those were found in surface and subsurface soil. The inorganic chemicals were found to be very similar to background amounts. That means -inorganic chemicals

are generally naturally occurring if they are similar to background, so in this area, the inorganic chemicals were found to be similar to the background, which is areas that have not been subject to any kind of contamination. Also found in the area were organics and pesticides and they were found in concentrations that presented no unacceptable risks to human health and the environment. And again, we are talking about, in this area, only surface and subsurface soils were sampled because there were no surface water or sediment areas found on that cite.

Potential Source of Contamination 2, the rubble disposal area. Once again, same as PSC 1, organic and inorganic chemicals and pesticides were found in both the surface and subsurface soils. And again, exactly the same as PSC 1, the inorganic chemicals were very similar to background amounts; the organics and pesticides were found in concentrations that did not present an unacceptable risk.

Potential Source of Contamination 3, the long term landfill. In the surface soils there were small amounts of, again, organic and inorganic chemicals, pesticides and one hit of polychlorinated biphenyl. In the subsurface soil, surface water, and sediment, pesticides and PCB's were found in these media. At the site, with the exception of a sludge pile, which 1 will discuss later, the contaminates were found - all the contaminates were found in concentrations that presented no unacceptable risk to human health and the environment. As 1 said, I'll talk about the removal of the sledge piles later and also due to the nature of this area being a landfill, we will impose future land use restrictions to protect the cap and cover and the contents within the landfill.

Potential Source of Contamination 26, the containment berm area. Small amounts of organic and inorganic chemicals were again found in surface and subsurface soils. There were no surface waters and sediment areas at PSC 26. The organic chemicals at the site were found in concentrations that posed no unacceptable threat to human health or the environment, but the inorganics, particularly iron and manganese, proposed a threat to possible future child residences. Therefore, we are going to propose a response action tonight.

Before 1 get into the actions that we are actually going to propose, we will talk about some of the completed actions that we have done at Operable Unit 1. We did a sludge pile removal at PSC 3. [After focusing the projector.] The sludge piles that we found here, the contents of those sludge piles looked and tested out to probably have come from our industrial wastewater treatment plant at one point. They were like very high in metals, at least PCB's and the piles themselves did present a health risk, so they were removed and the contents-or the soil that was removed from that area, contaminated soil, was deposited in a landfill permitted and built specifically to receive hazard waste. We have talked about or 1 will talk about how this proposed plan is only for the surface media - surface and subsurface soils, surface water and sediment. Some of the things that we have done under Operable Unit 1 are we have a temporary groundwater treatment system at PSC 3 and a containment system that is continuing to operate at this time. And we also did some treatability studies at PSC 1 where we tried different methods of groundwater treatment to see which one would be the best-most efficient, and would do the best job. Again, 1 will get into the groundwater portion in a little bit. But those are some of the actions that we've taken in Operable Unit 1 to make the areas less risky to human health and the environment.

What are we proposing tonight? For PSCs 1 and 2, since the risk assessment findings were within ranges that were protective of human health and the environment, we propose no action. No action response, which means there will be no further land use restrictions, no cleanups necessary. No action is basically what it means. And that is for the East disposal area and the rubble disposal area.

PSC 3, a little different story. What we propose tonight is institutional controls and possible

future deed restrictions. Why? Since PSC 3 was a landfill, we need to protect the area from activities that would disturb the soil cover or the contents of the landfill. Also, specific land use will be restricted; there will be no below ground structures to include wells, utilities, or extend walls of buildings, etc., basements. No business, industrial or residential facilities will be built at this site and no storage of chemicals will be allowed on the site at any time. There will also be specific actions in the event ownership changes. Should the ownership of this tract of land or the base change, we will register with the Dougherty County Registrar of Deeds deed restrictions, deed covenants. This will ensure future property owners know what is on the land that they now own and some of the actions that are prohibited, similar to the land use restrictions that we have for ourselves so that somebody else will not perform any actions that endanger human health or the environment. And any proposed land use changes will have to be scheduled through the Georgia Environmental Protection Division.

Potential Source of Contamination 26 we have a similar situation. We have institutional controls and possible future deed restrictions. And the reason why is a little bit different than PSC 3. The area as it is now, because of the iron and the manganese, is not suitable for future residential development. So measures have to be taken to prevent this from happening. Similar to PSC 3, there will be no below ground construction, no chemical storage at this area. And again, specific actions will be taken in the event of ownership change - change in ownership of the land. If the base should ever excess this land, the Dougherty County Registrar of Deed will add deed restriction and restrictive covenants to the new landowner so that they do not perform any actions in the future that might specifically, building of residential housing because of the risks at the site from the iron and manganese.

So in summary, PSC's 1 and 2, there will be no action. At PSC's 3 and 26, we'll have institutional controls and those institutional controls differ a little because of the reason why the institutional controls are going to be instigated. But they both will have the same type of deed restrictions necessary if the land should change ownership. If the land doesn't change ownership, the institutional controls mean that the base will pay particular attention to land use and what actions are done on those areas to protect us.

Mr. Collins, we do have copies of these slides, too, if you'd like a copy of all our stuff. We'll get with later, later; and Mr. Freeman.

Some of the things that need to be considered, again, this proposed plan only addresses the soil, subsurface soil, surface water and sediment. Those are the things not inclusive of groundwater, that the proposed actions we have for this sites and the ROD will be based upon, protecting these media vice the groundwater media which we -- groundwater is to be addressed in a separate base wide study. We have Operable Unit 6 now; Operable Unit 6 is dedicated solely to the investigation of basewide groundwater; tracking were the contaminants are, how fast they are going, when they are going to reach a point where there might be a problem; et cetera. So again, we are just talking about surface soil, subsurface soil, surface water and sediment.

Numerous cleanup actions and safety measures have been or, under this proposed plan, will be taken to address the risks that exceed U.S. Environmental Protection Agency guidelines. Those--basically it boils down to PSC 26 and the inorganics, iron and manganese. The protective actions taken for PSC 3 are for different reasons.

Our last slide - the reason we have a public meeting and have a public comment period is because community involvement is important. If there are any comments, they may be discussed at tonight's meetincl, by regular mail, we have comments sheets on the table over here if you would like to go home and think about it, think about any questions you may have. You may take it home, right it in and send it to us. If you have got electronic mail, my electronic mail

address is up here; you can send your questions by E-mail. Or they can be either phoned in to Regina Hegwood at 439-5215. She's the Public Affairs Officer here at the base. She does most of the public/base interfacing. But if you'd like to call myself directly at 439-5637, that would be perfectly OK too.

The proposed plan, we have several copies of it here tonight, and other site documents, such as remedial investigation, risk assessment, these are significantly bulkier documents. They contain all the information about the sites and the investigations that we have performed to determine what we wanted to do today; what we are proposing. That is the backup information for our proposed plan. And they are available for review at the Dougherty County Library, in the reference section, or in my office. 1 have the administrative record at my office on base. Just come in and we have a copy of all those backup documents here also.

That is basically it for the presentation portion. If you haven't had a chance to look at the poster section, it has more information that you can digest and if you have any questions, comments, or concerns, we can discuss them after you've had this chance. We will be around here tonight as long as it takes to answer any questions or discuss anything you'd like to discuss about the site.

The public comment period is July 14 through August 12. So it is next Tuesday and comments again, may be submitted in any of these forms. Or you may come to my office and talk directly to myself or my boss, Jerry Palmer. That would be perfectly acceptable. Is there any question, any comments, any type of concerns you might have, feel free to contact us or one of the people from the Environmental Protection Division or EPA.

[No questions were asked during the public hearing. Individuals spoke with the visitors before they departed.]

The foregoing is an accurate transcript of the public meeting held at Marine Corps Logistics Base, Albany, Georgia, on Thursday, 7 August 1997, beginning at 7: 10 p.m. and lasting approximately 15 minutes.

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GS-319-08, Closed Microphone Reporter
MCLB, Albany, GA

APPENDIX B

INSTITUTIONAL CONTROL PLAN. FOR
POTENTIAL SOURCE OF CONTAMINATION 3
INSTITUTIONAL CONTROL PLAN FOR PSC 3
Marine Corps Logistics Base
Albany, Georgia

This attachment identifies Institutional Controls restricting (a) human access to and contact with subsurface soils within the former solid waste landfill, and (b) certain activities occurring on, around, or under Potential Source of Contamination (PSC) 3 of the Marine Corps Logistics Base (MCLB) , Albany. Figure B-1 presents the general configuration of PSC 3 within MCLB, Albany.

Background

As a result of previous investigations, MCLB, Albany was placed in Group 7 of the National Priorities List for Uncontrolled Hazardous Waste Sites, according to Title 40, Code of Federal Regulations (CFR), Part 300 (40 CFR 300, July 1991). ABB Environmental Services, Inc. (ABB-ES), was contracted under the Comprehensive Long-Term Environmental Action, Navy contract (contract number N62467-89-D-0317), to prepare and execute Remedial Investigation and Feasibility Study Workplans, Site Screening Workplans, and associated documents for 26 PSCs at MCLB, Albany. PSC 1 (East Disposal Area), PSC 2 (Rubble Disposal Area), PSC 3 (Long-Term Landfill) and PSC 26 (Containment Berm Area) comprise Operable Unit (OU) 1 at MCLB, Albany.

A remedial investigation/risk assessment (RI/RA) was conducted at OU 1 from March 1992 through June 1995. The public health and ecological RA determined that exposure to surface and subsurface soils, surface water and sediment at PSC 3 posed an acceptable risk according to the U.S. Environmental Protection Agency (USEPA) Region IV for existing or potential future exposure scenarios (ABB-ES, 1995); however, Institutional Controls are required by USEPA Region IV and Georgia Environmental Protection Division (GEPD) to ensure that the integrity of t~e soil cover on the former solid waste landfill is not disturbed. Land management activities, such as prescribed burns to reduce the potential for forest fires and the disposal of organic debris, will continue to be permitted.

PSC 3. The Long-Term Landfill is a 38-acre trench-type disposal area located approximately 2,800 feet due west of the Indian Lake Refuge area and immediately south of North Shaw Road (Figure B-1). This area was reportedly used for the disposal of solvents, paints, thinners, strippers, pesticides, sludges, polychlorinated biphenyls (PCBs), garbage and paper between 1954 and 1988. The landfill was operated from north to south with regular burning until the early 1970s. This landfill was officially closed in 1988 in compliance with the State of Georgia solid waste regulations. Closure certification required the installation of a soil cover and the planting of natural vegetation. Three sludge piles were also located on the surface of the soil cover in the northeast corner of PSC 3 (Figure B-1). These sludge piles were removed and disposed of off-base at a permitted disposal facility under a Time-Critical Removal Action in May 1996. PSC 3 is currently being used to dispose of organic debris, such as trees, branches and grass cuttings.

The RI confirmed the presence of low concentrations of volatile organic compounds, semivolatile organic compounds, and inorganics in both the surface and subsurface soils at PSC 3. The concentrations of these compounds were consistent with background levels detected at PSC 3 (ABB-ES, 1995). Low concentrations of pesticides and PCBs detected in the surface and subsurface soil, surface water and sediment are likely related to historical road maintenance practices and not due to historical disposal practices.

These RI data were evaluated to determine whether the substances found onsite occur naturally or resulted from past waste disposal. Based on this evaluation, a list of chemicals of potential concern (CPCs) was developed for each environmental medium (e.g. , surface soil) sampled at OU 1. An RA was then prepared in accordance with USEPA Risk Assessment Guidance. This guidance reflects a conservative approach to RA to ensure that subsequent cleanup decisions are protective of human health and the environment. Exposure pathways to these CPCs evaluated within the RA included a current land-use scenario in which an older child trespasses as well as future residential development and associated utility construction on OU 1.

Human health and environmental risks associated with exposure to surface and subsurface soil, surface water, and sediment at PSC 3 were found to be acceptable by the USEPA Region IV. However, Institutional Controls will be implemented at PSC 3, as defined on Figure B-1, to maintain the soil cover on the former solid waste landfill.

Land-Use Restrictions (Institutional Controls)

The OU 1 Record of Decision calls for the implementation and continued application of appropriate restrictions on future usage of the property encompassing PSC 3 while it is owned by the Federal government. These restrictions will apply until/unless site remediation is conducted to restore the site for unrestricted use. Should the Navy later decide to transfer, by deed, ownership in the property encompassing PSC 3 to any private person or entity, then the provisions of paragraph Deed Covenants and Conveyance of Title as set forth on page B-4 of this Institutional Control Plan (ICP) shall apply. Until that time, the following Institutional Controls will remain in effect:

MCLB Security. Physical access to the property surrounding PSC 3 is controlled by base security measures, including fencing, pass and identification procedures, guardhouse, and periodic security patrols.

Authorized Activities. The following activities are permissible within the confines of PSC 3:

land management activities, such as prescribed burns to reduce the potential for forest fires and the disposal of organic debris;

maintenance of existing utility lines; and

such activities or uses that will not disturb the integrity of the landfill soil cover, unless such other activities are required to ensure adequate protection of human health and the environment.

Unauthorized Activities. Those activities and uses that are inconsistent with the objectives of this ICP, and which, if implemented at PSC 3, could pose an increased risk of harm to health, safety, public welfare, or the environment may not be conducted at PSC 3. The following activities are not permissible within the confines of PSC 3:

construction of a belowground structure (including but not limited to foundation walls, wells for drinking water, irrigation, or other domestic purpose);

construction of facilities specifically intended for use as business, industrial or residential housing;

installation and/or storage of chemicals, waste chemical products, or equipment with the potential for chemical leakage; and,

such activities or uses not specifically stated under "authorized activities" listed above that will disturb the integrity of the landfill soil cover.

Proposed Changes in Uses, Any proposed changes in permissible uses at PSC 3 that may disturb the integrity of the cover on the former solid waste landfill shall be evaluated by a licensed engineering professional and MCLB, Albany Environmental Branch Office to determine whether or not the proposed changes will present a significant risk of harm to health, safety, public welfare, or the environment. Any changes in use of PSG 3 are subject to approval by USEPA Region IV and GEPD.

Deed Covenants and Conveyance of Title. Should the decision later be made to transfer ownership of the property encompassing PSC 3 to any private person or entity, then the Navy shall either (1) take all actions necessary to remediate the site to then existing residential cleanup standards prior to effecting such transfer, or (2) deed record with the Dougherty County Register of Deeds appropriate restrictive covenants prohibiting future disturbance of the site's surface cap through routine excavation or building/utility construction, maintenance, or repair activities on or immediately adjacent to the site. Should the Navy not have the requisite legal authority to record such deed restrictions, then it shall take all steps necessary to ensure that the cognizant Federal agency with such authority does so unless the property is remediated to residential standards prior to such transfer. Should cleanup of the site not be effected to residential standards, then notification will be given to USEPA Region IV and GEPD at least 30 days prior to any conveyance of title to the site to any third party(ies) and the purchaser(s) of the site will be advised via the deed documentation as to then existing site conditions and any/all associated Institutional Controls and long-term monitoring requirements.

Posting, This ICP will be referenced in all MCLB, Albany Utility Maps and in MCLB, Albany's Master Plan. No maintenance or construction activities are planned without referring to these documents.

REFERENCES

A-BB Environmental Services, Inc. 1995. Remedial Investigation and Risk Assessment Report for Operable Unit 1, Marine Corps Logistics Base (MCLB), Albany, Georgia. Prepared for Department of the Navy, Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina (May).

APPENDIX C

INSTITUTIONAL CONTROL PLAN FOR
POTENTIAL SOURCE OF CONTAMINATION 26
INSTITUTIONAL CONTROL PLAN FOR PSC 26
Marine Corps Logistics Base
Albany, Georgia

This attachment identifies Institutional Controls restricting (a) human access to and contact with surface and subsurface soils contaminated with inorganic constituents through residential development of the site and (b) certain activities occurring on, around, or under Potential Source of Contamination (PSC) 26 of the Marine Corps Logistics Base (MCLB), Albany. Figure C-1 presents the general configuration of PSC 26 within MCLB, Albany.

Background

As a result of previous investigations, MCLB, Albany was placed in Group 7 of the National Priorities List for Uncontrolled Hazardous Waste Sites, according to Title 40, Code of Federal Regulations (CFR), Part 300 (40 CFR 300, July 1991). ABB Environmental Services, Inc. (ABB-ES), was contracted under the Comprehensive Long-Term Environmental Action, Navy contract (contract number N62467-89-D-0317), to prepare and execute Remedial Investigation and Feasibility Study Workplans, Site Screening Workplans, and associated documents for 26 PSCs at MCLB, Albany. PSG 1 (East Disposal Area), PSC 2 (Rubble Disposal Area) , PSG 3 (Long-Term Landfill) and PSC 26 (Containment Berm Area) comprise Operable Unit (OU) 1 at MCLB, Albany.

A remedial investigation/risk assessment (RI/RA) was conducted at OU 1 from March 1992 through June 1995. The public health and ecological RA determined that the subsurface soils at PSC 26 pose an acceptable risk according to the U.S. Environmental Protection Agency (USEPA) Region IV. However, the surface soils at PSC 26 pose a potential noncancer risk to a future resident above USEPA criteria (ABB-ES, 1997). No surface water or sediment were present at PSC 26. Based on the results of the RA, USEPA Region IV and the Georgia Environmental Protection Division (GEPD) required the implementation of Institutional Controls to restrict potential future residential development of PSC 26. Land management activities, such as prescribed burns to reduce the potential for forest fires, will continue to be permitted.

PSC 26. The Containment Berm Area, measuring approximately 900 feet by 1,400 feet, is located approximately 1,000 feet east of Walker Avenue and immediately south of North Shaw Road (Figure C-1). Aerial photographs indicate that the surface of this area was disturbed some time between 1957 and 1964. Three disturbed areas and a berm were identified in the aerial photographs as shown on Figure C-1. The exact construction and use of the berm at PSC 26 have not been determined. Visual inspection of the berm indicates that the area may have been used as a disposal area; however, field investigations of this area disclosed no evidence that chemical wastes were ever disposed of within the berm. The area has not been used since approximately 1964 and has subsequently become overgrown with vegetation. Prescribed burning of brush is routinely performed by MCLB, Albany at PSC 26. In 1994, timber was harvested at PSC 26. This is done periodically to limit the potential for a forest fire.

The RI confirmed the presence of low concentrations of volatile organic compounds, semivolatile organic compounds, and inorganics in both the surface and subsurface soils at PSC 26. These compounds are possibly associated with past disposal activities (ABB-ES, 1997)

These RI data were evaluated to determine whether the substances found onsite occur naturally or resulted from past waste disposal. Based on this evaluation, a list of chemicals of potential concern (CPCs) was developed for each environmental medium (e.g. , surface soil) sampled at OU

1. An RA was then prepared in accordance with USEPA Risk Assessment Guidance. This guidance reflects a conservative approach to RA to ensure that subsequent cleanup decisions are protective of human health and the environment. Exposure pathways to these CPCs evaluated within the RA included a current land-use scenario in which an older child trespasses as well as future residential development and associated utility construction on OU 1.

Human health and environmental risks associated with exposure to surface and subsurface soil were evaluated in the RA for PSC 26. These estimated risks were deemed acceptable by the USEPA except for the potential, future child resident land-use scenario. The noncancer hazard index (HI of 5) exceeded the USEPA point of departure (HI greater than 1) thereby requiring an appropriate human health-based exposure restriction in this particular case. The elevated HI was due to the presence of inorganics in the surface soils, primarily iron and manganese. Therefore, USEPA Region IV and Georgia Environmental Protection Division (GEPD) required Institutional Controls be implemented that restrict future residential development and land use of PSC 26, as defined on Figure C-1.

Land-Use Restrictions (Institutional Controls)

The OU 1 Record of Decision calls for the initial implementation and continued application of appropriate restrictions on future usage of the property encompassing PSC 26 while it is owned by the Federal government. These restrictions will apply until/unless site remediation is conducted to restore the site for unrestricted use. Should the Navy later decide to transfer, by deed, ownership in the property encompassing PSC 26 to any private person or entity, then the provisions of paragraph Deed Covenants and Conveyance of Title as set forth on page C-4 of this Institutional Control Plan (ICP) shall apply. Until that time, the Institutional Controls listed below will remain in effect.

MCLB Security. Physical access to the property surrounding PSC 26 is controlled by base security measures, including fencing, pass and identification procedures, guardhouse, and periodic security patrols.

Authorized Activities. The following activities are permissible within the confines of PSG 26:

land management activities, such as prescribed burns to reduce the potential for forest fires; such activities or uses that will not result in the development of the site for residential purposes or pose a continuous, long-term exposure to child residents located near the site, and thus will present no greater risk of harm to health, safety, public welfare, or the environment; and such activities required to ensure adequate protection of human health and the environment.

Unauthorized Activities. Those activities and uses that are inconsistent with the objectives of this ICP, and which, if implemented at PSC 26, could pose an increased risk of harm to health, safety, public welfare, or the environment may not be conducted at PSC 26. The following activities are not permissible with the confines of PSC 26:

construction of a belowground structure (including but not limited to foundation walls, wells for drinking water, irrigation, or other domestic purpose);

construction of facilities specifically intended for use as residential housing;

installation and/or storage of chemicals, waste chemical products, or equipment with the potential for chemical leakage; and

such activities or uses not specifically stated under "authorized activities" listed above that will result in the development of the site for residential purposes or pose a continuous,

long-term exposure to child residents located near the site.

Proposed Changes in Uses. Any proposed changes in permissible uses at PSC 26 that may result in the development of PSC 26 for residential use shall be evaluated by a licensed engineering professional, and MCLB, Albany Environmental Branch Office to determine whether or not the proposed changes will present a significant risk of harm to health, safety, public welfare, or the environment. Any such changes in use of the site are subject to approval by USEPA Region IV and GEPD.

Deed Covenants and Conveyance of Title. Should the decision later be made to transfer ownership of the property encompassing PSC 26 to any private person or entity, then the Navy shall either (1) take all actions necessary to remediate the site to then existing residential cleanup standards prior to effecting such transfer, or (2) deed record with the Dougherty County Register of Deeds appropriate restrictive covenants prohibiting future residential usage of the property or disturbance of the site's surface soil through routine excavation or building/ utility construction, maintenance, or repair activities on or immediately adjacent to the site, Should the Navy not have the requisite legal authority to record such deed restrictions, then it shall take all steps necessary to ensure that the cognizant Federal agency with such authority does so unless the property is remediated to residential standards prior to such transfer. Should cleanup of the site not be effected to residential standards, then notification will be given to USEPA Region IV and GEPD at least 30 days prior to any conveyance of title to the site to any third party(ies) and the purchaser(s) of the site will be advised via the deed documentation as to then existing site conditions and any/all associated Institutional Controls and longterm monitoring requirements.

Posting. This ICP will be referenced in all MCLB, Albany Utility Maps and in MCLB, Albany's Master Plan. No maintenance or construction activities are planned without referring to these documents.

REFERENCE

ABB Environmental Services, Inc. 1997. Remedial Investigation and Risk Assessment Report Addendum for Operable Unit 1, Marine Corps Logistics Base (MCLB), Albany, Georgia. Prepared for Department of the Navy, Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina (May).